THE BOOK WAS
DRENCHED

The Art of
Practical Thinking

Second Indian Edition

The Art of

Practical Thinking

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AN INFORMAL DISCUSSION,

WITH EXAMPLES, FOR

THE INTELLIGENT

LAYMAN

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By

Richard Weil, Jr.

BOMBAY

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TO

A. H. W.

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PART III. THE END OF THINKING

Foreword

You *will find, at the beginning of Chapter I, a more or less formal explanation of what impelled me to write this book. I thought I would describe briefly in this foreword a special purpose which also acted both as an incentive to do the book and an influence on the manner of doing it.*

I am faced daily in my own work with a constant succession of practical problems having to do, in one or another way, with thinking. When we interview applicants for jobs we try to gain some reasonably accurate idea of the kind of thinking they may be capable of. When we place people in positions of any responsibility we try to do certain things to improve the efficiency of their thinking on the job. In the general range of our daily business problems we try to see to it that the solutions are based on good thinking.

But the trouble is that good thinking doesn't grow on trees—nor do good thinkers. We have no real difficulty finding people of good character

to fill jobs.   Not much more difficulty is involved in finding people who combine with good character an adequate amount of relevant business experience and an acceptably pleasant personality.   The real hitch is in finding people who know how to use their minds.

We have the most extraordinary trouble—and so, I have no doubt, does every other company—in finding people who know that, faced with a problem to be solved, they have to do certain things, in a certain order, to solve the problem.   Even such simple rules as finding out whether you have enough information, and whether the information is dependable, seem to be honored more in the breach than the observance.   The rule that to solve a problem properly you must first state what the problem is does not always seem noticeably to influence the thinking of business people.   It is quite clear too that many of the people who are trying to succeed in business do not know that the rules exist.   They work their fingers to the nub trying to achieve certain rich effects from which they hope to reap rich rewards—and they invest all this time and all this energy and effort in a game where they hourly break rules whose names they don't even know.

I thought for a while of introducing into our company a senior executive who would enjoy a

sonorous title, but whose job would be to teach executives to think—not to be brain-trusters, but just to learn (and occasionally practise) some of these basic rules. This project went up the spout when the man to whom I broached it decided to stay in academic life.

My next thought was to do a simple outline of the things I had in mind and hold a series of informal discussion groups with a view to interesting people in these rules. I thought that we might, with time, spread the doctrine usefully and rather widely through the organization. I had (and have) an idea that it would mean extra dollars in the pay check of every individual who would go to the relatively small trouble of studying it.

Just at that time Mr. Schuster came along, and said, " Why don't you do a book ? " So I did.

RICHARD WEIL, JR.

About The Author

Richard Weil, Jr., is among the youngest of America's leading business executives. Serving an eight-year apprenticeship with R. H. Macy & Co., beginning in 1928, he went then to L. Bamberger & Co., with an unexcelled knowledge of the executive side of department-store work. He has been president of Bamberger's since 1939. Mr. Weil is a wide reader without being a bookworm, for he is a devotee, too, of golf, tennis, swimming, and riding. He also likes the movies. A native of New York, he is married, has two children, and lives in Englewood, N. J.

PART I

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THE ACT
OF THINKING

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Why Should One Learn About Thinking?

" Why," you may ask, " should a businessman write a book about thinking ? " And if you raise the question you may well go on to ask some pertinent further quest ons. " What is his interest in the subject, theoretical or practical ? What are his qualifications ? Why should *I* as a reader be interested in an analysis of the problem of thinking ? Lastly, if I go to the trouble of reading the book carefully, what will it do for me ? " I think I owe it to you to begin this book by trying to answer those questions.

First, why should a businessman or, to be more specific, this businessman, write a book about thinking ? In general, people write books for art, for praise, for money, to discover their own thoughts or to spread a doctrine. This book is written principally to spread a doctrine. The doctrine is that *men—all men—can think better and be the better for it.* Although the spreading of such a doctrine might in itself justify the writing of a book, this book, as you have inferred from the title, is going to concern itself mainly with questions of *how to think better.*

Now for the second hypothetical question. Is my interest in the subject theoretical or practical ? My answer is, " Both." Since I have chosen

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in this book to confine myself almost entirely
to the practical side of the problem, I shall hope
only in passing to indicate the aesthetic side—
the delight a man can experience in what has
been called " the very and absolute light of the
mind." And I shall touch, but lightly, on some
rather challenging problems in the theory of
thinking. But on the whole I shall confine my
efforts to showing the reader that if he is an
average man he can, as a direct result of reading
this book, learn to think better about the problems
with which he is occupied in his daily living, and
you may fairly judge the success or failure of the
book by the degree to which, after you have
finished it, you find you have been put in the
way of doing this for yourself. For make no
mistake, thinking is like all the other arts—you
can be helped by others, but, strictly speaking,
you cannot be taught except by yourself. There
is no easy road to real artistry in any activity ;
yet, if the rewards are rich the labor is not to be
grudged. I know of no richer rewards than
those accorded the individual who learns to think
well.

I come next to the question of my own quali-
fications to treat of this subject. Let me say
first what qualifications I do not pretend to. I
cannot truthfully, I am sorry to say, represent
myself as being a great thinker—one who is
qualified to teach the art because he has mastered
it. I might suggest in extenuation that there
have not been many such, but I have in mind
a different answer. If we insist on a great thinker

to teach us to think we must either go to the great dead teachers of the past or wait some indefinite time for a man of the present (or future) to instruct us. The difficulty is that civilization has made such rapid strides in certain phases of thinking that I know of no *one*—no, not even any small *group*—of dead writers from the reading of whose works we might readily obtain the whole story that I imagine we need. It may be that even now an artist in thinking is engaged on such a work. I do not know. I know only that the live teacher has not shown himself and the dead teachers need a mediator. It is in this role that I address myself to you.

I have said that I am not a great thinker, but I am afraid that I must further disqualify myself by confessing that I have not read all the books which in my judgment are relevant to a full grasp of the problem I am here undertaking. This sounds alarming. If I am neither a great thinker nor a complete reader in the literature of thinking, what can be the qualifications which might properly license me to tell others how to think ?

They are these. Although I have not read all the books germane to the subject, I have read many of them—I suspect more than the average man. Although I am not a great thinker, for many years I have been much absorbed in this matter of good and bad thinking—thinking as a process. It is the old hare and the tortoise story—a man may think more slowly and even less well than he should and still, slowly and

laboriously, over a period of years, attain to an ownership of some segment of truth that he can cherish and, if he so choose, can share. My qualification is, then, that I have addressed myself assiduously to this problem of thinking over a period long enough to dare to believe that I now have at least more than the normal man's knowledge of the terrain, its highways and byways ; and possibly, too, more than every man's knowledge of the signposts and the language, the safer and the less safe routes, and the quicker and surer forms of conveyance.

What you asked next had to do with why *you* should be interested in an analysis of the problem of thinking, even after we have established that it is a problem which interests me. That is rather closely related to the final question of what a good book on how to think might do for you. If it can help you to accomplish better or more surely the things you are trying to accomplish, then no further reason would be needed for you to read the book with care and even avidity.

Not until you have actually read the book can you know for certain whether or no it offers you this help. I can, however, throw some partial light on the question by telling you of an experience that I had some two years ago. I was anxious at that time to obtain at least a tentative answer to two points about which I had been wondering—whether the average, intelligent person would be receptive to the suggestion that he might learn to think better, and what use he might make of such a suggestion.

It had been my practice to meet regularly with a certain group of senior business executives, mature people of more than ordinary intelligence, who were carrying considerable responsibility in the business world. I had in past meetings listened to many discussions, some good and some not so good. Toward the end of this particular meeting I said that I had heard enough time wasted in divers ways at some of these meetings so that I was willing to risk wasting, say, half an hour in my own particular way. I went on to say that I was interested in exploring with them an academic subject and that I proposed to explore it in an academic way. I told them that I wanted to introduce this subject by considering some unacademic and perfectly practical situations.

" Imagine yourselves," I said, " asked to sit down with three recognized bridge experts to play an afternoon of bridge. If you had never played bridge before, did not know the conventions, the signals, or the approved methods of play, will you agree with me that you might conceivably win a rubber, but that you would probably be the loser at the end of the afternoon ?" They agreed readily. " Would you further agree," I inquired, " that if the game were for high stakes you would be extremely foolish to play at all ? " Further consent was signified.

" Let's," I said, " take a similar example. It is quite possible that, never having played a game of golf before, you might be asked to play

a round with an excellent, lowhandicap player. You go up to the first tee not knowing one club from the other, nor which club is meant for which shot. You take a club blindly out of the bag, address the ball, close your eyes and swing. Let's assume that when you open your eyes you see your caddy waving his arms and shouting. 'Hole in one.' Stranger things happen. I think, however, we can again agree that this would be an unlikely outcome of your effort. In any case, whether or not you made your 'hole in one' in the first shot, if you were to finish the round with the expert golfer, you would probably lose the match. Maybe we can agree further that if you bet a large sum on the outcome of the match you would also in this instance have been somewhat less than wise.

"I submit to you that here is an analogy to these situations we have conjured up. All of you are engaged in business at the administrative level, so that it might be said, with some degree of truth, that you are engaged in the game of thinking. You are, furthermore, engaged in this game, not to put too fine a point upon it, for what I take to be high stakes. Now, if you are engaged in the game of thinking for high stakes, I presume that it would be altogether fair to ask you, as in the case of the bridge player, what are the conventions of thinking. Or, to be even more specific, we might ask, as in the case of the golf player, what are the different clubs in the bag, and which club is for which shot. I should

like to pause at this point to have someone
around the table name any of the tools of think-
ing that might be said to correspond to the clubs
in the bag which are the tools of the golfer's
activity."

There was, I am sorry to say, a long moment
of uncomfortable silence. "You see now," I
went on, "what I was getting at. I apologize
for having made my point abruptly, but I want
you to believe that the abruptness was only a
handy way of emphasizing a point that I think
will bear some emphasizing. I would like now
to go on to explore the implications of this dis-
covery that there are tools of thinking and that
we don't know what they are. At least we
don't seem to know them exactly enough, or
consciously enough, to state them. Let's see
whether we can dig up some sort of practical
solution for this difficulty.

"It has long seemed to me that one of the
troubles with our so-called business thinking is
that we act as though there were no art of thinking
which might be learned from people who had
practiced it and taught it in the past. This is
a major error. Over two thousand years ago a
man named Aristotle, who was a great thinker
and a great teacher, went forth and taught
principles in the art of thinking which to this day
are as true and as timeless as they were in the
day in which he lived. Maybe an examination
of certain of his ideas will bring us some of the
help we are looking for.

" There is another consideration in this matter of thinking which we cannot well afford to overlook, if we are playing the game for high stakes. It is that thinking, like other parts of nature, is subject to laws. Not all the laws are known and not all of them are without exception, but for the most part the laws exist as real laws and you cannot break them without suffering consequences. Consequences of breaking the laws of thinking are that you will be liable to do bad thinking. If you take action on conclusions not in conformity with the laws of thinking, you are not unlikely to engage in bad acting.

" One final preliminary item, and then I am ready to discuss the elements of thinking I have been leading up to. There are a great many people in the so-called applied fields, such as business, who greatly pride themselves on the fact that they are ' practical,' not ' theoretical,' people. I have often heard such people say, with a considerable show of satisfaction, ' I 'm not much on theory, but give me a job to do and I'll do it. I haven't much use for theory.'

" No statement could be sillier. Men succeed and fail in business, and live and die in life, by a great many theories, whether or not they recognize them under that name. There is one way, however, in which the applied arts and sciences differ sharply from the theoretical arts and sciences as to theory. In the theoretical arts, there may be such a thing as a good theory which ' doesn't work.' In the field of metaphysics, for

example, there is no such thing as a theory which 'works,' so that this test is simply not applicable. A theory is maintained or a conclusion is reached in this field, and it is said to be good or bad, according to whether it is reached by an internally consistent process of reasoning, whether all types of reasoning applicable have been 'employed, and whether the information on which the theory was based seems to have been accurate and reasonably comprehensive. In the applied fields such as business, on the other hand, there is, strictly speaking, no such thing as a good theory which *doesn't* work. If it is a good theory it works, and conversely if it doesn't work it is a bad theory. Although some technical exceptions are possible to this, I believe on the whole that it is a fair statement.

" Now, finally, to the question of some of the tools of thinking. The simplest and most primitive thinking tool was called by the Greeks *analogy*. It is a process of reasoning from particular to particular. Let me illustrate. One of the buyers under your supervision asks you to authorize his placing of a very large order, say for a hundred thousand dollars. You think back to an experience some three years ago, when a buyer came to you with a similar request. At that time you investigated the situation, satisfied yourself that it was wise to place the order, gave the necessary authorization and found later that your decision was a justified and a profitable one. You determine, after questioning the buyer on this occasion, that the

purchase is to be made under substantially the same conditions as the one of three years ago, and that the differences do not seem to you to be significant. You therefore authorize the purchase. You have reached a conclusion and given an answer by use of the process of analogy.

"There is nothing wrong with this process. It is basic to all thinking, and I had not intended to infer, when I said that it was the simplest and the most primitive tool, that it was unsatisfactory, undependable, or for any other reason to be avoided. I was simply indicating that people of the most limited thinking power, even if they make the most infrequent use of the other processes, almost inevitably, if they are rational, make extensive use of the process of analogy.

" The next tool of thinking was labeled by the Greeks *deduction*. This is a process of reasoning from general to particular. Again let me illustrate from your own business. A buyer comes to you and says the store across the street has just reduced its price to $2.50 on an article you have been selling for $2.95. The article in your stock is not identical, but equivalent. What, asks the buyer, should he do about it ? You recall the fact that your store has a general policy, or rule, to the effect that it will not be undersold by comparable competitors on either identical or equivalent merchandise. Reasoning from this general rule to the particular question at hand, you tell the buyer to go back pronto and mark his merchandise $2.50, and why did he come up to

ask you in the first place, he knew the policy just as well as you did. In this instance, you have reached a conclusion by the process of deduction.

"So we come to the third principle or tool of thinking, designated by the Greeks as *induction.* This is the process of reasoning from particular to general. It is one of the most fertile and productive of the thinking processes. It is a means of creating new generalizations. It is the hardest to use of the three tools of thinking being considered.

"Now there is no advantage to us, as business people, in knowing the three labels I have just been describing, or the processes they signify, if, without knowing these things, we always instinctively select the proper tools for the proper problem, and if we make sufficient and proportionate use of the three of them. The trouble is that we don't. It has been my observation, and I think a well-founded one, that business people make the least use of the third tool, that of induction, the most difficult and, at the same time, the most useful of the three clubs in the bag. I would like to suggest that if we were more fully aware of the fact that there are these three clubs in the bag, we might consequently be more aware of how seldom we use the valuable third one. Such consciousness might lead us on to more frequent and determined efforts to use the third one and also to that greater expertness in use, which is most likely to arise from constant trial and constant practice.

" I want to bring this academic subject as close as I can to the daily realities of your business. You will have facing you shortly a perfectly practical problem, which you face every year, of how to obtain more volume of business in the naturally dull month of July. I recommend that you use an inductive approach to this problem. See if you can build up some new, realistic, and practical ideas about getting extra July business, through an effort at discovering some new and useful generalizations. The question I want to leave with you is, ' What kind of thinking, not done in the past, might result in customers doing more purchasing in the month of July than heretofore ? If customers cannot be induced to increase their total volume of July purchasing, how at least can they be persuaded to divert more of their present volume of purchasing to your store ? ' This is, of course, simply an expanded form of the original question, ' How can you get more business in July ? ' Let's find out whether the expanded form of stating the problem, together with a conscious application of the tool of induction, can help to uncover any new clues." That was the end of the meeting.

This meeting had two sequels, both significant, which constitute the point of the story. The first sequel has to do with the way in which the members of the meeting reacted to what I had to say. Of some twelve men present at the meeting, two, I learned later, actively resented what they considered to be a slur on their own ability to think. They resented, too, I discovered, all such

academic intrusions on any business meeting. They seemed, for some inscrutable reason, to regard theoretical speculation in a business meeting as being in some way a personal affront to them. They objected also, but on less personal grounds, to the waste of important executive time on what seemed to them (had they been able actually to articulate their opinions) nothing more than sophomoric classroom folderol.

Two or three more members of the meeting were largely indifferent to the discussion. They had no special objection to anyone who wanted to try to get some good out of it, but, for themselves, they could find no benefit.

The remaining seven or eight were really interested. They were the ones who did believe that if they improved the abstract quality of their thinking, they could thereby expect to achieve more surely and more practically their immediate ends in business. Most of them went farther and voiced the belief that better thinking would help them in other ways—would tend to make them better people, not just better businessmen. This was distinctly heartening. Four or five out of the eight told me they would like to find out more about this business of thinking— what could they do ? I told them it was hard work but worth it, and that if they were serious I would give them titles of books to read, and then I would, if they liked, try to help them with the interpretation of the books. These men are now still engaged in the profitable and exciting quest

which they first entered upon some two years ago. To my sympathetic eye they are already keener thinkers.

The other significant sequel to the meeting has to do with the direct attempt that was made by these executives to unearth, inductively, new ways of getting business in July. They held meetings with their assistants. They explained to their assistants, more or less as I had explained to them, what they were trying to do and how they planned to try to do it. They generated new interest and excitement, but, what is really important, *they generated new answers.* Nothing world-shaking, nothing that tripled their July volume, but still, new answers that appreciably enlarged their program over previous years and tangibly affected their final results. Now, there you have my whole point. There was a group of men who, after only one exposure to a different concept of thinking—and a sadly incomplete, hurried, and unworkmanlike exposition, at that —were able to feel interest, act on that interest, and act beneficially and resultfully. That's why I think a whole bookful of the same—even a faulty and incomplete bookful—might work wonders.

What Is Thinking?

IF YOU have agreed, at this point, to explore with me the question of how to think or, to use a more proper title, how to think better, the next order of business would logically seem to be some consideration of what thinking is. What is this process of which we propose to learn more and which we wish to learn to do better? We might as well face promptly the fact that a correct definition of the process of thinking is traditionally a knotty and subtle problem. Let us for the moment leave subtleties to the schoolmen and wordchoppers, and strike out boldly by saying that the process of thinking is the process of arranging experience into patterns. Analogy, Deduction and Induction, which were described in the last chapter as tools of thinking, might, with equal correctness, be termed patterns of thinking. Imagine, if you will, a bag of marbles, some large and some small, and red, green, and blue in color. Let us say that you wish, first, to find all the different ways of arranging these marbles into *analogous* patterns. You would have various choices open to you. You might say that they were all analogous, because they were all round and because they were all marbles. Or you might say that all the reds were analogous to each other, the greens to each other, and the blues to each other; or you might say that all of the large

marbles bore an analogous relationship to each other and all of the small marbles to each other. This would exhaust the more obvious possibilities of analogy in this particular bag of marbles. It becomes apparent, from this example, that analogy has to do with similarity and difference, and that the method of use of patterns of analogy is predetermined by the elements of similarity and difference that you choose to designate as being controlling.

If you wished to make an inductive generalization about these marbles, you might find, from weighing a few of them, that the larger marbles always weighed more than the smaller marbles. You might then reach an inductive conclusion, or generalization, to the effect that all larger marbles of similar composition would invariably be heavier than all smaller marbles of similar composition.

If someone then handed you one larger and one smaller marble, you might conclude deductively, without weighing the marbles, that the smaller marble was lighter than the larger one.

In these three illustrations you see the use of the three so-far considered tools of thinking. To arrange a particular segment of experience, which was symbolized above by a bag of marbles, into patterns from which conclusions may be drawn: that is what is meant by saying that thinking is the process of arranging experience into patterns. Like most generalizations, however, this is an oversimplification of the process that actually takes place, and its justification is that it permits

of an insight into the basic nature of the process of thinking which might not otherwise be possible. If you talk to a doctor or a psychologist about the nature of thinking, you will get a more complicated and technical though possibly less understandable explanation of the phenomenon. If you talk to a philosopher, you will also get a more complicated and technical though still less understandable explanation. If you talk to the ordinary man in the street, you will get a far less complicated, less technical, and utterly ununderstandable explanation of the same phenomenon. Faced with this unsatisfactory range of choice as to the definitions of the act of thinking, perhaps you had best, for the time being at any rate, accept the explanation that I have offered, reserving, however, your constitutional right to refine and enlarge the definition as your knowledge of the technicalities that I have indicated is itself enlarged.

Thinking takes place on what certain psychologists, such as Freud, term unconscious, foreconscious, and conscious levels. For our purpose, however, we will talk simply about thinking taking place on the conscious level and on the subconscious level. Thinking on the subconscious level may be described as instinctive, unarticulated, or " hunch " thinking. By contrast, thinking on the conscious level may be described as articulated, reasoned thinking. The latter type is dependent for its success primarily on two factors: the symbolism we term language, and the ability of the mind to retain and to revert usefully to experi-

ence symbolically stored up in the past. We will have occasion to discuss this further, in a subsequent chapter, under the heading of semantics.

Subsconscious thinking, which is properly termed intuition, and was recognized by the Greeks under the name of *nous*, is the original and basic process of thinking. From it has stemmed all the acquired processes of reasoning, all of the useful discoveries and inventions, all of the enchanted imaginings of the artists, as well as the utilitarian achievements of the scientists. It is well to establish at this point that the subconscious process of intuition has, in practice, at least two advantages over the conscious and articulate process of reasoning. Intuition is always quicker than reason ; it can (theoretically) solve any problem soluble by reason, and can in addition solve certain problems apparently insoluble by reason. It is only fair to point out, however, that reason also has its advantages. They are three in number. Reason is the process which permits you to check the validity of a decision before you put it into execution. Second, the process of reason is communicable, therefore teachable, which intuition is not. A man may tell another man how, on the conscious level, he reached a conclusion. He cannot explain how he reached an intuitive conclusion on the subconscious level, unless he is subsequently able to raise the intuitive thinking to the conscious level, at which point it becomes reasoning.

I want t o bequite clear on this point. You are, let us say, a surgeon, and your friend sends his son, now a junior in college, to see you. The boy is considering medicine as a career and wants to know how you decided, at his age, to embrace that calling. If you say to the boy, " I had a hunch it would appeal to me," or " I had a feeling in my bones that I could do well at it," you're really not being of much help to him. If he had wanted to depend soley on intuition, he could have made an equally good decision about his own career without ever inquiring into the origin of the decision which brought about yours. What he wanted to know was how you, at his age, reasoned the thing out, and unless you are able to go back in your own mind to that earlier date and raise your original subconscious hunches to the conscious level of articulated steps of reasoning, the value of your experience is not communicable, hence not teachable, to the young man seeking your help.

Reason has a third advantage : in many in-stances it is more dependable than intuition. Here is an obvious case. If you were asked to divide 645,792, say, by 3472, you might conceiv-ably get the right answer intuitively, but it is clear that if you happened to be familiar with the process of long division, which is a form of reasoning, and if you obtained your answer through an exercise of the process of long division, the figure you got would be likely to have notice-ably greater dependability than whatever reply

you might have elicited from an earnest consul-
tation of your subconscious.

Let us turn our attention to the question of
the relationship of all thinking to two other forms
of human activity. We are investigating the
question of what is thinking, and one of the
useful ways of acquiring an understanding of
what an activity is lies in examining the nature
of its relationship to kindred activities. The
three principal activities of living may be said
to be wanting, thinking, and doing. Thinking
is in certain ways the dominant of these three
factors. It does not entirely dominate wanting
because wanting is made up of two other forces
only partially subject to the influence of think-
ing. One of these forces is the aggregation of
biological and physiological instincts and reac-
tions innate in the human animal. The other
is environment. I recommend to you in this
connection a short but fascinating book, again
by Aristotle, entitled *Nicomachean Ethics*. This
is as understanding and up-to-date a philosophical
treatment of the subject of human behavior
as I know to exist anywhere.

The subject of behavior is considered from
the standpoint of virtue. Plato, in the *Prota-
goras*, had listed virtue as being of five sorts—
wisdom, courage, justice, temperance, and
holiness. Aristotle, dissatisfied with the incom-
pleteness of this analysis, defined virtue as a
state of character which is always a mean between
two extremes. He separated virtue into two

kinds—moral virtue, having to do with right
wanting, and to be acquired by habit and repeated
practice, and intellectual virtue, having to do
with right thinking, and to be gained by instruc-
tion and understanding as well as by practice.
Aristotle's moral virtues are prudence, courage,
justice, and temperance ; also liberality, magni-
ficence, pride, ambition, good temper, friendliness,
truthfulness, ready wit, and a proper sense of
shame. The first four are considered to be the
major moral virtues. The intellectual virtues,
as described in the *Ethics,* are only five in number:
science, art, practical wisdom, intuitive reason,
and philosophic wisdom. Of these, he considers
philosophic wisdom the most to be desired of
all human goods, and in this he agrees with both
Plato and Socrates. Aristotle shows in his book
not only that these are the virtues, but why
they are, and how they are to be come by.
Although he does not say so explicitly, we may
infer from his writings, or reach by our own
independent conclusion, as the case may be, the
opinion that if one were forced to make a choice
between possession of the moral and intellectual
virtues, one would have to choose first' possession
of the moral virtues, for there is scant benefit
in being able to think well if the things one wants
are the wrong things and one's thinking is being
exercised to the better obtaining of these wrong
things. (Philosophic wisdom would, of course,
be excluded from any such choice, since pos-
session of it is thought to imply possession of all
the other virtues as well.)

On the other side of the activity of thinking is the activity of doing. Even if one wants the right things and thinks of the right way of getting them, if one cannot act effectively, all that which has preceded is abortive. When I said that thinking is the dominant, but not entirely dominating of the three activities, what I meant was that each of the three performs its necessary function in the total activity of living, but that good thinking can lead to better wanting on the one hand and better doing on the other.

There is one other useful distinction to be made in a proper consideration of what is thinking. The psychologists have devised a phrase which is useful: "frame of reference." By "frame of reference" they intend to convey that total body of experience to which you refer any particular statement that you may make. Within the entire realm of the activity of thinking, three frames of reference seem possible. First comes the religious frame of reference, comprised of those voluntary acts of faith which the individual sees fit to make (or just makes). This is not to infer that faith and reason are themselves in opposition to each other, nor that articles of faith involve necessarily belief in things contrary to reason. The point is that no act of faith is needed to buttress belief in an idea already attested by an act of reason, and conversely, no act of reason will ever constitute a proper challenge for a belief deliberately held through an act of faith. The religious frame of reference is said, therefore, to be merely

tangential to the other two. Voluntary acts of faith are subject to no laws or acts of reason and are not to be disputed on any grounds whatsoever.

Second comes the scientific frame of reference : those so-called facts the individual knows, or can know, by reference to the accumulated store-house of facts that have been gradually and laboriously gathered together as man and civilization aged.

The third frame of reference is the philosophical frame of reference, having to do with all those matters which are neither acts of faith nor items of knowledge, but which lie in that hinterland beyond the known, but not beyond all knowing. All ethical questions of should I or should I not ; all metaphysical questions of being and becoming, and substance and essence and what is truth ; all epistemological questions of what do I know and do I really know what I know, belong to this third frame.

Again, it is not useful to know the distinctions unless you know the use of them. The use of them is various and each according to its nature. You never, as has been said, properly dispute about articles of faith, you simply inquire about their relationship to living and thinking and doing. You dispute, if at all, about matters of knowledge in the scientific frame of reference only to the extent of satisfying yourself, if you are so qualified, as to the provability, according to certain, definite scientific conventions, of whatever proposition is in question.

In philosophical matters, the disputatious questions you may ask are four in number, and are well set forth in Mortimer Adler's recent book entitled, *How to Read a Book.* If (and only if) you understand the proposition to be discussed, you may, according to Dr. Adler's etiquette of dialectic, advance one of four criticisms, and only these four. You may say: you are uninformed, or, you are misinformed, or, your analysis is incorrect, or, your analysis is incomplete. I am reminded here of a favorite statement of one of my friends to the effect that you cannot rationally win an argument by raising doubts about the parentage of your opponent.

If these nicer distinctions in the realm of thinking were properly understood, many tedious and utterly unremunerative arguments might be eliminated. Especially is this true of the first rule, to the effect that if you do not understand a proposition you are not yet qualified to disagree with it or criticize it. If likewise the distinctions between wanting and thinking, or by an easy transition, between feeling and thinking, were equally well grasped, innumerably more fruitless arguments would also die stillborn. I think with these observations we have sufficiently surveyed the question of what is thinking, and may reasonably proceed to the next topic on our program.

Some Attention Given to the History of Thinking

WE HAVE established certain grounds for our interest in thinking and given some consideration to determining what the process of thinking actually is. We may next suitably concern ourselves with finding out whether thinking has a history and, if so, of what sort.

It has already been remarked that the essential phases of man's living have not gone altogether unnoticed for the past two thousand or more years and that, indeed, some thoroughly noteworthy observations have been made on these processes by various great thinkers of the past. Let us carry our minds back, for a moment, to the fifth century B.C., that fabulous, golden age of Greece. In those days, philosophy had its true birth, and flourished. Thinking was important, and the ways of thinking.

These early Greeks were perfectionists of a good sort, whether the business at hand happened to be a foot race, the construction of a frieze for a new building, or the comparison of two ways of thinking to discover which of the two was the better; in all of these matters, the way of doing things was of grave moment, and nothing less than perfection was quite acceptable. Let us be clear on two matters. The people that I

refer to as these early Greeks were, in strict point of fact, the long and late flowering of an old and marvelous Greek civilization. Also, their ceaseless quest of perfection did not, of course, result in actual finding, but it did result in about as close an approach to actual finding as has, to my knowledge, been made before or since.

In the field of philosophy, conditions were particularly favorable to astonishing progress. The restless activity of the Greek mind, its ever-present inclination to grapple with the unknown, its delight in speculation, and its bright and shining native wit were some of the ingredients which went into the making up of their philosophical achievement. Whether by good luck or good management, so-called schools, made up of both young and old who were eager in the quest for wisdom and truth, sprang up around the great thinkers of the period. When you further added to this the rich patronage of certain leading citizens who gave freely to finance the investigations and material needs of these schools, you find what seems to have been an almost perfect soil in which to cultivate best the fruits of philosophy. After a long line of lesser men, we come gratifyingly upon that good, ugly man of much wisdom, Socrates. He may well be regarded as the father of all good dialectic, and for this gift alone we must remain always in his debt. He believed, to give dialectic a less pretentious name, in good conversation. He believed in it for its own sake. He practiced it, he encouraged it, and under his gentle guidance

it grew and flourished and reached a most high level. He knew that the most desirable object in the world was truth, and he believed that in its seeking came wisdom. He never, to be sure, really expected to find truth, but he taught his pupils that if they understood that there was such a thing as truth, and that it was not yet in them, they would already thereby have taken the first firm step in the direction of truth, and, perhaps, the acquiring of wisdom.

It is a work of supererogation to try to sketch either the spirit or the teachings of Socrates. That has been done unalterably and incomparably by his master student, Plato. If by chance you are not already familiar with this inspired biography of a teacher, enriched by the genius of the recording pupil, I entreat you to delay no longer in according yourself this pleasure. It is a matter of great regret that books should have been written about Plato, and then books about books about Plato ; because had it been impossible to learn his thinking without savoring of the original, more good reading would have been done in the world, and maybe no one the worse.

The third of this great trio and, at least to my way of thinking, the greatest was Aristotle, who inherited the lore of his predecessors and transformed it into something greater than it had been. Aristotle had the gift of analysis, in full and pre-eminent measure, and the most complicated and confused material took shape and significant form under his magic ordering. He

took for his field the entire range of philosophy and classified it into the four divisions of logic, ethic, science, and aesthetic. He subclassified and subanalyzed the subject matter in each of these divisions and made a map so clear and complete that it remained for future generations, for the most part, simply to fill in the details of a geography that he strongly and irrevocably sketched.

The cornerstone of the Aristotelian system is his logic. Being a Greek, he was concerned with the way of doing things, and he said that if you could find a right way of thinking you could then think rightly about the problems of ethics, science, and aesthetics. Aristotle's system of thinking recognized three forms of thinking— intuition, formal logic, or the science of necessary and valid reasoning, and those other forms of useful but less compelling reasoning which, in later days, mathematicians explored under the title of probability. Most of his work, however, had to do with the procedures of formal logic, and it was in this connection that he developed his masterpiece, and one of the great discoveries of all time—the syllogism. The system of the syllogism consisted of a set of formal procedures whereby a man was enabled, if he knew a certain thing was so, to infer that then certain other things *necessarily* were so.

The science of the syllogism is a study in itself and one which I commend to your attention. All I wish to note here about it is that it was the

original charting of the so-called " if-then " form of reasoning. Aristotle indicated with clarity and precision what kind of premises could legitimately lead to what kind of conclusions.` From a particular premise and a particular middle term, no general conclusion may be drawn. You may not draw a positive conclusion from a negative premise and a negative, middle term . . . and so forth. Aristotle enumerated eleven fallacies in formal reasoning. Four of them were called formal fallacies : that is, regardless of the subject matter of the reasoning, if one of the formal fallacies was present, the reasoning was not necessary or valid. He listed further seven material fallacies ; that is, fallacies having to do with the subject matter itself. Such familiar expressions as " *non sequitur* " and " begging the question " were contained in Aristotle's original list of material fallacies.

Again, I remind you that there is no inherent benefit in knowing Aristotle's rules for the development of the syllogism or the fact that there are eleven possible fallacies. The only advantage is if, in your daily living and thinking, you can know the satisfaction and the benefit of avoiding certain gross errors which arise out of the transgression of these rules through ignorance of their existence. If you are able uniformly to reason well and avoid the errors without ever having known the rules or heard of the word syllogism, it would doubtless be a waste of your time to attempt to familiarize yourself with these things. The fact is, it is hard enough to think well and avoid

error even when you do know the rules. I should say, judging from my own observations, that it is literally impossible when you don't know them.

I confess to a feeling of discomfort in suggesting thus, superficially, the characteristics of a system of logic which is too complex and closely knit to be even properly hinted at in so few words, but I engaged, at the outset of this book, to avoid, as far as possible, the academic side of the subject of thinking and to stick mainly to those practical things, which the ordinary, intelligent layman might expect to encompass in a day's reading and so profit thereby.

Aristotle had over the years and centuries the usual bevy of followers, interpreters, distorters, and latter-day commentators. We do not, however, find another giant in the land of thinking until we move forward some sixteen centuries to the twelfth century A.D. This was the time when the medieval churchmen and scholiasts were splitting asunder on the sharp rocks of such pointed questions as, " How many angels can dance on the head of a pin ? " The real conflict, of course, arose out of a misunderstanding of the relationship between the religious and the philosophical frame of reference ; and devout Christians were being profoundly disturbed by their inabilities to resolve such dilemmas as, for example, the problem of free choice. If God was the all-knowing and the all-powerful pastor of the flock of men and looked after their comings in and their goings out, how then could these infidel philosophers

raise a question as to men having a free choice ? If, on the other hand, the philosophers were the true men of wisdom, how could they be preoccupied with the question of free choice, unless such a choice did, in fact, exist ? And if it did exist, what did that do to God's position ? And so on, and so on.

Saint Thomas, a great churchman and a great philosopher, wrote a *Summa Theologica* and resolved these dilemmas magnificently. From that time up to the present, the philosophical stream flowed more slowly, but yet steadily, particularly in France, Germany, and England. Good thinking was done about thinking and good writing recorded it. In the last one hundred and fifty years, however, the stream started to muddy again.

Needless and largely meaningless struggles took place between the scientists, and the philosophers. The names themselves became meaningless, as scientists emitted vaporings about philosophy and philosophers heaped contumely upon scientists. Psychology arose as a new science. Physics was graduated into a non-Newtonian region. Mathematics proceeded at a rapid pace into a non-Euclidean stratosphere. Even formal logic digressed into non-Aristotelian ways. The old gods were said to have feet of clay, and a state of chaos and anarchy impended. That, more or less, is where we stand today.

There are schools of logic, psychologic, and logistic, Aristotelian modified and non-Aristotelian.

Surely, out of this seeming welter of claim and counterclaim, some acceptable semblance of order can again be drawn and reasonably established ?

I have transgressed a second time, because what I have been describing to you is part of the academic problem in which I am interested. The practical application is this: social and scientific change indicate the desirability of some enlargement of our scheme of thinking beyond the classical and still basically sound scheme of thinking established by Aristotle. There is nothing in the new schemes of logic which was not implicit in Aristotle's system ; but they have been made explicit by their various protagonists without their relationships to the original system or to each other having been clearly and usefully set forth.

I believe that better thinking today will be achieved partly by an understanding of the classical system and partly by an understanding of the relationships of the various new systems to the old. This may sound to you more forbidding and infinitely more perplexing than I believe it need actually be. It will be the purpose of Part II of this book, entitled " The Art of Thinking," to set forth simply, and I hope for ready use, some of the principles of better thinking that a consideration of all of these different systems makes possible.

I want to indicate to you before closing this chapter the names of some of these new systems and their sponsors, so that if curiosity should at

some time prompt you to go to the original sources, which I hope it will, you may make your own interpretations of the significance of these various systems and establish your own order of relationships between them. Classic logic belongs to Aristotle. Modified classic logic boasts considerable modern literature, of which F. C. S. Schiller's *General Logic* and *Logic for Use* are two fair examples, and Alfred Sidgwick's *Applied Logic* is another. Symbolic logic, which is a sort of shorthand, mathematical logic, is well represented by Bertrand Russell's *Principles of Mathematics,* *Principia Mathematica* by Whitehead and Russell, and the *Laws of Thought* by Boole. Semantics, which is concerned with the nature of language as symbol, may best be studied in *Science and Sanity* by Count Korzybski, a Polish mathematician and psychologist, and in *The Meaning of Meaning,* a book by two Englishmen, Ogden and Richards. A sort of "Mickey Mouse" interpretation of the subject matter of semantics may be obtained in light-reading form from Stuart Chase's *The Tyranny of Words*. The logic of the continuum is well described in a book entitled, *The Technique of Controversy* by Bogoslovsky. In addition to these, there is the work of the mathematicians on the logic of probability, which, if represented by a single book, might well be studied in J. M. Keynes' *The Theory of Probability.* And for good measure, I toss in Mortimer Adler's book, *Dialectic*, which is the first really tolerable examination of this topic that I know of since Socrates. If you intend seriously to tackle any of these

books, you had best start by reading Adler's book, *How to Read a Book*.   Even if you don't get any farther in your list than this as a first title, you will have put yourself in the way of ingesting some most excellent brain food.

A fairly formidable list, and still only a microscopic section of the immense literature on these subjects.   However, art is long and time is fleeting, and if you can get somebody else to read them for you and distill from them reasonably dependably those portions which may be of particular and immediate use to you, you will have missed some pleasure but gained some time.   At least that is my thought.

What Can One Think *About*?

In our quest for better thinking we have proceeded thus far in the best tradition by examining first, " Why we should be interested in the subject," next, " What the subject matter is," and then, " What its history is." Accordingly we find ourselves, now in logical sequence, about to discuss the material on which the operation of thinking can operate. Thinking can operate on any material which has come within the range of experience. It cannot operate on anything else. Experience, as used in this sense, is intended to include not only firsthand physical experience but also such secondhand experience as is acquired vicariously through the graphic arts of literature, painting, or the movies, through the auditory arts of conversation, lectures, or radio broadcasting and in fact through any form of sensory impression which can be recorded in the mind.

It is very important to understand the significance of the proposition that thinking cannot operate except on experience. You cannot think about the uses of the symbol $\sqrt{-1}$ unless at some time, and in one form or another, that symbol has come within the range of your experience. Before the discovery of America, it was not possible for Europeans to think about America. They might, and did, think about the possibilities of lands beyond the sea ; but it must be apparent

that what they were thinking about was the possibility of the similarities or differences between such lands and the lands that they knew. That is, they were thinking about the lands they knew and what possible variations might exist from such lands. Strictly speaking, therefore, they were thinking in terms of their own lands and about their own lands, not about America.

Coming back to our immediate subject matter, you can't think about the syllogism if you've never heard of it. You may think about your own approximation of it, or parts of it, but that isn't the same thing. Now I hope I have indicated successfully that you can't think very intelligently about thinking unless at some point you can think about the syllogism, and so the question of the range of your experience becomes one of the essential determinants of the range of your thinking.

If you pursue this line of reasoning to its logical ultimate, you must unavoidably reach a very discouraging conclusion—one which I reached long ago. The conclusion is this : no matter how purposefully and energetically you plan your experience, vary your exposures, and diminish your areas of ignorance, your undiminished areas, your unilluminated areas, will still be so extensive that you will probably never be in possession of all of the relevant information on any problem whatsoever. This means that no matter what the quality of your thinking may be, you will always be in danger, almost in

certainty, of having omitted entirely from your calculations at least one, and probably a good many more than one, of the really significant factors which should help indicate the solution. This is not a vague possibility, it is an appalling truth. It might well lead you to wonder again why you should spend good effort trying to improve the quality of your thinking when you know before you start that the material on which you can exercise your thinking is so hopelessly insufficient.

Well, I'll tell you what I think the answer is. The art of living is essentially the art of making decisions on incomplete evidence. You have to make decisions whether you like it or not, simply to go on living. You have to make them on incomplete evidence whether or not you like it. And there is a thought which keeps running through my head to the effect that the more inadequate the evidence on which you must make your decisions, the more necessary it is that the quality of thinking brought to bear on this inadequate evidence be of the best possible sort.

There is one solace in this great slough of uncertainty, and it is this which keeps so many people going, so many businesses in business, so many educational institutions pursuing their weary but dutiful round of failing to educate people. The solace is that just as your own information is thoroughly inadequate to the solutions of the problems with which you are

faced, so is everyone's else. You have, therefore, as good a chance as the next one of getting your quota of right answers.

Having painted for you the dismal side of the picture, it is only reasonable and fair that I should outline the brighter and more hopeful side as well. You are not altogether and hopelessly the victim of circumstance in this affair. You can exert some control over the range of experience which you have. If you are a typical person, you have probably failed, either in whole or in part, to avail yourself of the most potent single control that I know of—the reading of books.

It is the reading of books that enables a man to lead a hundred lives instead of one; to live in all ages and to adventure in all countries, to explore the physical realms and the metaphysical and all that lies between. Not everyone is taught to read books in his youth. Most people nowadays are taught their ABC's and how to go through some superficial performance which passes for reading, such as turning the pages of a newspaper or magazine, but I don't mean that. I mean reading. I mean extracting somewhere near the full measure of factual information, emotional satisfaction, and mental stimulation that books do offer if you want to avail yourself of them.

If, however, you are one of the hopeless unregenerates who have never learned to read in this sense and really can't learn, there are open

to you all the other avenues that I suggested before. The theater, the movies, and, above all, the gentle and almost lost art of conversation. Whichever of these avenues you choose to travel, you should by all means keep in mind what I referred to earlier as your areas of ignorance. If you don't know anything about philosophy, talk to somebody who does. If you don't know anything about pictorial art, go to a museum and see some pictures. If you don't know anything about the history of that very civilized country called China, read a book about it.

A great many impassioned pleas are made for the need of true education in the liberal arts in order for democracy to survive. I believe in democracy. I believe in education in the liberal arts. But my chief interest in the liberal, or liberating, arts is not that they will make possible the perpetuation of the democratic form of social order, much as I believe in that. My chief interest in them is that under any form of social order, they will make free men—men who have learned the disciplines of acquiring experience well and thinking well about it, and are free as a result.

There is further encouragement with regard to an individual's ability to round out his experience intelligently. This encouragement has reference to the qualitative acquisition of experience as against the quantitative. Two people look at a sunset. One sees a reddish ring around the sun, and decides that it is going to be a hot day tomorrow. The other not only registers this

particular item of local weather forecast, but sees
as well a glorious massing of color, a symphony of
the spectrum, a subtle blending of the most
indefinably luminous hues, a daring contrast of
light and shade—a whole range of optical im-
pressions of the most intense delight.   The second
man might go on to moralize about the importance
of sunsets in the daily round.   Or he might
make up a rich pattern of connections between his
viewing of the sunset and the rest of his experience.
He might think with pleasure of a certain Hous-
man poem or a particular Turner picture.   Both
of these men have seen the same sunset, but the
quality of the experience they have derived from
the viewing is quite evidently of a very different
order.

Well, we have discovered no new truth in this
history of a sunset.   It is a matter of common
knowledge that some people get more out of an
experience and some people less.   Equally may
it be said to be a matter of common knowledge
that a person can consciously exercise some con-
trol over the extracting of the full benefits from
an experience, but we still talk and talk, and
what do we do ?   It is like Mark Twain's time-
worn jape about the weather :   " Everybody talks
about it, but nobody does anything about it."
But the point of this chapter is that you *must*
do something about it.   Mostly, in the past,
you have been told that you must learn to appre-
ciate Artistic experience—that is, Art with a
capital *A*.   What I'm saying, and it is not original
with me, is that you must learn to appreciate *all*

experience. You must learn to extract from experience, instead of the one tenth that possibly you now extract, at least the one half which, with a little intelligent effort, you could make yourself master of. And the other difference in what I am telling you is that you must do this not simply for the artistic pleasure you might derive therefrom, but because, if you are seriously bent on improving your thinking, you must also improve the quality and range of experience on which you can exercise your thinking.

It reminds me of the distinction in the first part of *Gulliver's Travels*, the Voyage to Lilliput. You will remember, perhaps, in this land of small people, where the average citizen was approximately the height of your thumb, that the emperor, who was a ruler of noble stature and great proportions, was said to have overtopped his subjects by the thickness of a thumbnail. So it is with information. Nobody has much. If you have an iota more than the iota of your neighbor you possess a marked and substantial advantage. And in this world of competitive living, such an advantage is one of the things that most people continue earnestly to desire.

THE ART
OF THINKING

The Instruments of Thinking

– I –

The First Instrument : Intuition

OF ALL games loved by children, I suppose that none has been more loved than the game of " make-believe." When this game grows up and puts on philosophical long trousers, it is sometimes known as the philosophy of " as if." There is, in fact, a book of this name, written by the German Vaihinger. Vaihinger's book is a study of the nature, value, and limitations of the " as if " device, which he happens to characterize as the device of " scientific fiction." The real kernel of the book is contained in Vaihinger's insights into the many-sided use of the temporary and conscious untruth. Both scientific and philosophical progress would have been much more difficult, if not impossible, in the world if great thinkers had not made use of this " as if " device —this temporary but beneficent untruth or " make-believe."

We talked a little while ago about wanting, thinking, and doing, as the three fields of human activity. This is by way of being a scientific fiction. You can't literally separate wanting and thinking from each other, and it is very questionable whether you can separate acting from either ;

but it serves a useful purpose and illumines a dark corner if we temporarily and knowingly indulge in this harmless untruth and so, through the artificial separation, learn things about human behavior which might otherwise have gone undetected. We will have occasion to examine further the nature of scientific fiction in the sections dealing with symbolic logic, semantics, and the continuum. Suffice it now to say that it is a good device if the user is conscious of the fiction.

It seemed to me proper to begin a conversation about the art of thinking with some slight disquisition such as this on the nature of scientific fiction. The reason is that although true art of any kind consists in a smooth, rhythmic blending of multiple and complex activities, yet it is only by making an artificial separation into the theoretical components of the art that the intending student may, through intensive study and practice, first of one part and then of another, eventually achieve that smooth, rhythmic blending which was the origin of his analysis and the goal of his synthesis.

It is a simple formula : if you want to learn to ride a horse well, one way is to find someone who is a good horseback rider and study him. See what he does with his feet, his legs, his hands. A good rider, of course, is not conscious of separate activities taking place among these several members—he simply rides the horse. But you, as a student, by observing these functions separately

and then mastering them separately, may eventually arrive at that easy and almost unconscious mastery which the artistic horseman possesses. You must, to be sure, beware not to fall into the first trap of the academically inclined student. You must not, as a horseback rider, become so devoted to the difficult problem of what is called in horsy circles " good hands " as never to go on to the learning of what is called, in the same circles, " a good seat." Both, be it observed, are equally necessary to the continued performance of the art of riding.

So similarly in the art of thinking. One is not to become obsessed with the fascinations of the continuum to the exclusion of a rudimentary understanding of semantics or a bowing acquaintance with the moods and mannerisms of the syllogism. These and other instruments, or patterns, of thinking that I plan to enumerate and describe for you are the artificial, and to some extent unreal, parts of the smooth, rhythmic art of thinking. The real artist in thinking is frequently no more conscious of the riding of a syllogism or the harnessing of a continuum than the accomplished rider is of the steed which carries him.

In the set of scientific fictions wherewith we propose to dissect the art of thinking, we are first to consider the faculty of intuition. We include in that faculty all unarticulated thinking. There is a very odd mystery contained in this, the inner veils of which have not yet been pierced by even the most expert of psychologists or philosophers.

Subconscious or intuitivethinking appears to go on almost continually in the human mind during life. It occurs when consciousness is present and when consciousness is shrouded in sleep. It goes on simultaneously with articulated conscious thinking and continues when conscious thinking stops. It includes the faculty of memory (what Korzybski calls " time binding "), just as it includes the faculty of arranging experience into patterns. It contains within it the real essence which distinguishes men from all other organic matter. The outward form and substance which distinguish men from animals is at least somewhat apparent to us, but it is to this mysterious essence which we have reference when we speak of the soul or the mind as being the peculiarly distinguishing mark of Homo sapiens. Intuition is at once the source of those endless new patterns of experience which we name discovery and invention, and of the most egregious and illimitable error. It is the main weapon in the arsenal of thinking. It is, indeed, the source of all thinking, so it is worth some knowing about.

I say " about " advisedly. It is like electricity in the field of science. Nobody knows what electricity is. Nobody knows what intuition is. But we know a great deal about electricity and something about intuition. We know that intuitive power varies in different people. Psychologists have for the last four decades or more been attempting to devise empirical measurements of these differences under the title of " intelligence quotients," or I.Q. tests.

This brings me to one of the few *very* important points that I want to make in this book. For a long time psychologists believed that the I.Q. of an individual was constant; that once having measured it you had, for all time, an approximation of the individual's intellectual capacity. More recent work in the field, however, has yielded grounds for belief that the exact opposite is true; that people's intellectual power can vary enormously at different stages of life. The present-day "defeat of the schools" that Adler describes in his book on reading may, in part at least, be laid at the doorstep of those psychologists of the early twentieth century who believed in two related propositions—the fixed character of an individual's I.Q. and the nontransference of the learning process. In other words, what they believed and taught was that a given individual has a fixed thinking capacity; that this capacity cannot be increased; that you cannot teach a person to think any better than he *can* think; and that therefore all you can hope to do in the educational process is to pack and cram, into a sort of mental portmanteau, as many durable items of fact as the poor, quivering, but defenseless brain of the school child can be made to carry. Hence the resurgence of the so-called "product" rather than "process" method of education. Teach them dates, teach them facts, teach them formulae. Since the poor things can't learn to think any better, they may at least, for their tuition fee, be given as generous a pennyweight of so-called information as can be jammed into the container.

I don't believe in that. I believe in the process method of education. I wish to heaven our schools and colleges would address themselves a little more intently to teaching people how to think and a shade less intently to cramming. Well....that's another story. Whether or not people can, as I believe they can, improve their actual faculty of thinking—their intuitive power — it still remains always worth while to try to teach them to think at least as well as they can within their power. And the purposeful cultivation of the intuition is the first step in that process. ·

Let us recapitulate. Thinking is the process of arranging experience into patterns. Intuition is the label we give to that process when it takes place at a subconscious level. As the source process of all thinking, this power is worth cultivating and improving. The question is " how ?"

Please do not have your hopes raised at this point, even for a moment. I offer you no magic brain liniment, brewed from a secret formula, and passed down in a straight line from old Merlin—try a bottle, just one bottle—satisfaction guaranteed, or your money back. I haven't got the formula. Neither has anybody else. There are a few simple suggestions which, like the old housewives' remedies, sometimes help and sometimes don't. And that's all there is, anywhere.

Your intuitive faculties will never reach their greatest force if, through all your waking hours,

the conscious part of your mind is engaged in active contact with reality. Many hours of purposeful reflection, with no fixed, specific object engaging the conscious attention, are absolutely indispensable to the proper cultivation of intuition. Psychologists make a distinction between aimless daydreaming and what I have described as purposeful reflection. Daydreaming may or may not have its value. Purposeful reflection does. Don't ask me why it does, or what specifically it does for you. The statements I have just been making are already well past the final boundary of demonstrable propositions. They are themselves intuitive opinion, and as such I pass them on.

Of recent years psychologists have devoted time and energy to investigating how the process of intuition can be induced and stimulated. These studies are suggestive, although for the most part the clues they offer are not very different from what a well-informed and energetic mind could have deduced from unassisted but competent introspection. Fatigue, particularly that arising from pleasurable and attention-compelling physical exertion, is one method of stimulating the intuition. Similarly, fatigue caused by intense mental effort, such as that involved in the positive appreciation of music, pictures and the theater, is effective. Simple distraction, such as arises from the mere apprehension of, for example, music, instead of the above-described active function of listening, works well for many people. Intuitive activity can be

chemically stimulated through the use of coffee, alcohol, and certain drugs. (This last group of stimuli, the author hastens to interpolate, is just mentioned, not recommended, and does not, to use that pious evasion now current in the best radio circles *"necessarily* reflect the views of the station to which you are listening.") Good books and good conversation were mentioned in an earlier passage as being almost the best of all the available means.

I conceive that another way to develop the intuitive faculty is to pose yourself a problem— any problem. Reflect on it purposefully and then leave it for a time—a day—a week—a month Come back to it, and, if it is still unsolved, repeat the process and repeat it again. One of the many mysteries of intuition is that, like another well-known remedy, it works while the patient sleeps, eventually revealing the solution to complex problems in what we call a flash of insight.

Part of the scientific fiction involved in considering intuition as a separate faculty lies in the pretense that we sometimes solve a problem by conscious and sometimes by unconscious reasoning, and that these two things can be separated. When the celebrated French mathematician, Poincaré, solved one of his knottiest and one of his most important problems, the solution awakened him in the middle of the night with one of these lightning flashes of insight. He had worked on the problem for years. He had

tried all manner of conscious reasoning processes known to him. The problem had become imbedded in his subconscious and behold! one night he awoke and the answer was there. So you see that no matter how I or another may discourse about the finding of solutions, still to a great extent, the secrets remain hidden. All we may do, at best, is to know the different instruments, employ them as cunningly as we can, and, for the rest, hope for the answer.

If this were all, nevertheless, one large part of the art of thinking would be eliminated. It is true that the mystery of solving problems remains essentially a mystery; but very often, when the true solution has not been found, and a false solution is advanced, artistic and knowledgeable thinking will enable us to detect the falsity and resume the search. This brings us to the second instrument of thinking—formal logic.

– 2 –

The Second Instrument : Formal Logic

Aristotle says, in his *Metaphysics* (980-21): "All men by nature desire to know." A little farther on, in the same work (1000-52), he says: "The attempts of some to discuss the terms on which truth should be accepted are due to a want of training in logic; for they should know these things whole when they come to a special study, and not be inquiring into them while

they are pursuing it. Evidently, then, the philosopher who is surveying the nature of all substance must inquire also into the principles of syllogism."

The syllogism was, so far as is known, the first formalization in the history of the world of the processes of conscious reasoning. Let us start with a classic example of a simple syllogism: "All men are mortal. Socrates is a man. Therefore, Socrates is mortal." The first statement, to the effect that all men are mortal, is based on inductive reasoning. In the case of this particular statement, if you stop to think about it, there is no way of proving it. We do know with reasonable certainty that all men who have lived so far have died. We proceed from the knowledge of an immense number of particular facts such as this to construct an inductive and nonprovable generalization to the effect that all living and all future men will also die.

The next sentence states that Socrates is a man. The meaning here intended is that there is a species of living organism, the members of which have certain stated similarities to each other and stated dissimilarities from all other species, which entitle them to be placed in the class known as men. This second proposition is based on deductive reasoning: a transition from a general statement to a particular one.

The third statement, that Socrates is mortal, is what is called implication. It owns kinship

to a law that you learned in school, to the effect that things equal to the same thing are equal to each other. That is, to paraphrase, Socrates equals man, man equals mortal, therefore, Socrates equals mortal.

You will understand that any such simple explanation of a complex mechanism, such as the syllogism, represents a very incomplete analysis and is open to all sorts of accusations of superficiality and distortion. I must risk this throughout the book since if I must, perforce, choose between less complete but more understandable truth, and more nearly complete but less understandable truth, I propose, wherever the omission seems to me not to be capital, to disregard the logicians and talk the language of the intelligent layman. I shall be as careful as I can not to mislead you and to make mention wherever the omission seems to me to be serious, but by and large you can take it for granted that it is impossible to approach technical correctness in a discussion of logic and thinking and still keep the matter within a compass and to a form acceptable to the average reader; and it is to the average reader that I am talking.

I said that the process by which the conclusion of the syllogism was reached was closely related to a law in mathematics. This law in turn, as you will perceive, has a close affinity to Aristotle's original three laws of thinking, on which not only his syllogism but all the rest of

his methodology of thinking is founded. These
laws are commonly stated as being:

1.   A is A—the law of identity.

2.   A is not not-A—the law of contradiction.

3.   Everything must be either A or not-A—
     the law of excluded middle.

What he means evidently is that a horse is a
horse. A horse is nothing else except a horse and
every animal must either be a horse or not be a
horse.   Men cannot both be mortal and not be
mortal. Socrates cannot both be a man and
not be a man. And so we return to the syllogism.

All these things being true, then if men are
mortal and Socrates is a man, necessarily and
unavoidably, Socrates must be mortal. On as
simple a foundation as this—three laws of think-
ing and three terms of a construct called a syllo-
gism—was based the science of valid reasoning
and, in a very real and literal sense, the entire
march of Western civilization through the fields
of reason. Think of it ! Never before this time
had there been a way for all men to transform,
by common agreement, mere opinions into con-
clusions which could be held valid wherever and
whenever, and by whomever the conclusions
might be challenged.

I commented, in Chapter 3, on the intricate
conventions of the syllogism. In any elementary
course on logic, you will find yourself wading
knee-deep in predicables, terms, and propositions,
definition and classification, categories, genus

and species, analogy, induction, and deduction, analysis and synthesis, and a host of other technical tags. All of these things are important and worth knowing about, but not all of them are equally immediate to our present purpose. If you would like to consult an easy and compact handbook on formal logic, to learn more about these conventions and the reasoning from which they grew, get yourself a copy of *Elementary Lessons in Logic*, by the English scientist, W. S. Jevons. My guess is that without too much effort or application you can understand the rudiments of logic contained in it. If you want to go right to the original source, read Aristotle's *Analytics*, and then some of his other works on logic. In our consideration here of formal logic, all we're going to try to cope with is the broad nature of the syllogism, which we have just covered, and the nature of the syllogistic fallacies, which we will now examine.

These are the rules which enable you most readily to spot fallacious reasoning—error. In Chapter 3 we simply noted the existence of eleven fallacies. I want now to list them for you. First come the four formal fallacies : those fallacies which make for invalid reasoning regardless of the material content of the syllogism:

Fallacy of four terms : One of the rules of the syllogism is that it may contain only three terms. A syllogism, expressed in mathematical terms, would be : A is B, B is C, therefore A is C. But you cannot say, A is B, C is D, therefore A is D, where the existence of four terms, A, B, C, and

D, destroys altogether the formal validity of the syllogism. To distort the original example, you cannot validly say : " All men are mortal. Socrates had an ugly face. Therefore all men have ugly faces." Let me caution you that in this ridiculous example the fallacy is obvious, but in less patently ridiculous reasoning the fallacy of four terms, on the lips of a persuasive speaker, has frequently been known to win an argument.

The second formal fallacy is called the fallacy of undistributed middle. There is a syllogistic rule which requires that every middle term must be distributed at least once (and must not be ambiguous). An example of the fallacy which violates this rule would be : " All writers are clever men. All philosophers are clever men. Therefore all writers are philosophers." The middle term, " clever men," is undistributed in this syllogism. You could make the syllogism formally valid by substituting " All clever men are philosophers," thus distributing the middle term in the minor premise.

The third fallacy is called the fallacy of illicit process, violating the syllogistic rule that no term must be distributed in the conclusion which was not distributed in one of the premises. To use an example from Jevons : " All Anglo-Saxons love liberty. Frenchmen are not Anglo-Saxons. Therefore, Frenchmen do not love liberty." The major term, " loving liberty," is undistributed in the major premise. That is, the statement does not say that Anglo-Saxons are the only

ones who love liberty. Hence you cannot conclude, as was done in this syllogism, that Frenchmen do not love liberty.

The fourth is the fallacy of negative Premise; the logical rule being that if one premise is negative, the conclusion must be negative. As illustration, "Chinamen are not cowards. Men who are cowards do not make good soldiers. Therefore Chinamen make good soldiers." Chinamen may or may not make good soldiers, but you can't prove it by the syllogism above.

The seven material fallacies are rich sources of error. First is the fallacy of accident, which consists in attributing a causal relationship to a coincidence. Continuing to quote from the same source, "What you bought yesterday, you eat today. You bought raw meat yesterday. Therefore you eat raw meat today." The point to be noticed is that if you cook the meat before eating it you will render the conclusion of the syllogism untrue. The fallacy lies in the inclusion of the word "raw," which was an accidental quality of the meat.

The second fallacy, called the converse fallacy of accident, is sufficiently similar to number one so as to make no explanation needed.

Number three is called the irrelevant conclusion. If a man is accused of a crime, it is no answer to say that there are many worse criminals at large. The question is, "Is the man guilty?" and the conclusion about worse criminals is irrelevant.

The fourth fallacy is the one of " begging the question." " A moving body must move either in the place where it is or the place where it is not. A body cannot be where it is not, and if it moves it cannot be in the place where it is. Therefore it cannot move at all." This is a classic example of " begging the question," so complicated and befuddled that it should necessarily end all such examples.

Number five is the fallacy of *non sequitur*. "All men are mortal. Socrates is a man. Therefore he can't live to be very old." It is pretty plain here that the conclusion simply doesn't follow from what's been said.

I am not going to plague you with the other two fallacies. I have a comfortable feeling of guilt in having already loaded you with a fair number of technicalities. There is good excuse, though, for the technicalities that I included. You probably don't spend a day without listening to dozens of syllogistic conclusions and numerous examples of the different fallacies I have been describing. That alone would seem to make it worth while knowing what the fallacies are, so that you may at least avoid them in your own conclusions whether or not you feel like contesting them in the conclusions of others.

Self-confidence in reasoning, as in any art, derives in part from the knowledge that you have avoided mistakes. If, however, you don't know what the mistakes are, you won't know whether you have committed or avoided them.

Hence the justification for learning—by rote—the classic mistakes in reasoning.

There is a little more general information that you should have about the syllogism. Syllogism is sometimes designated as *mediate* or inference by the aid of a medium, or middle, term. The significance of this name is to help you distinguish syllogistic reasoning from *immediate inference*. In immediate inference, when one proposition has been stated you *immediately* infer as a conclusion a second proposition. For instance, first proposition, " No men are immortal "; second proposition, " All men are mortal." Do not be disturbed by the fact that the second proposition seems to be a mere trick of language, or a conversion of the first proposition. The illustration will serve to instance an immediate inference and you may simply bear in mind that not all immediate inference is characterized by such linguistic tricks. In mediate inference, or syllogisms, on the other hand, you reach your conclusion by comparing two things with a middle term. That is why we started our explanation of the syllogism by citing the mathematical law about things equal to the same thing.

Syllogisms are said to have moods. These moods are simply an enumeration of all of the different combinations that you can achieve in reasoning by setting up an exhaustive table of the different kinds of propositions. You will recall that syllogisms are made up of three propositions, assertions, or sentences. Each of

these three propositions may be affirmative,
negative, universal, or particular. This results
in a possibility of sixty-four different combinations
of syllogisms, depending on which of these four
types any one of the three propositions in a
syllogism belongs to. Of these sixty-four possible
combinations, fifty-three are, upon investigation,
excluded by logicians as being either invalid or
what they elegantly term "inelegant." This
leaves you with eleven so-called valid moods.
Even on this point logicians do not agree, since
some hold out for a larger number. Whether,
however, you ultimately swear allegiance to the
school of eleven or the school of sixteen or some
other school is of no great importance. Don't
worry about it.

Syllogisms not only have moods, having to
do with their types of propositions, they also
have figures. These figures describe the posi-
tions of terms within the propositions. The
predicate of the conclusion is called the major
term. Thus, in our syllogism about Socrates,
"mortal" is the major term. The major term
may be either the subject or the predicate of the
first proposition and by the same token the minor
term of the conclusion may be either the subject
or predicate of the middle proposition.

This further set of distinctions gives rise to
further possibilities of variations which add up
in total to a possible nineteen valid and useful
syllogisms, according to the opinion of most
logicians. That is, by the application of the

four possible figures to the original eleven valid moods, nineteen useful combinations are possible. It is on these nineteen possible combinations that all generally accepted reasoning was for two thousand years based.

Now it won't do you any good at this point to memorize the formulas which explain these nineteen different kinds of syllogism. I think it should do you some good, however, to know that they exist and to know that if, at some future time, you may want actually to study them, they are available to you in textbooks.

There is at least one other section of formal logic the existence of which should be a part of your knowledge. This is the all-important subject of classification. Logic has sometimes been defined as the theory of classification, which will give you a fair idea of the commanding position that this subject rightfully occupies. Classification is nothing more than the arrangement of things, or our notions of them, according to their resemblances or identities. To continue excerpting from Jevons : " Every class should be so constituted as to contain objects exactly resembling each other in certain definite qualities which are stated in the definition of the class." John Stuart Mill, an important English thinker, and, along with Bacon and Hegel, responsible for much of our present-day theory of induction, presents his view of classification in this way : " Classification is a contrivance for the best possible ordering of the ideas of objects in our

minds; for causing the ideas to accompany or succeed one another in such a way as shall give us the greatest command over our knowledge earlier acquired and lead most directly to the acquisition of more. The general problem of classification in reference to these purposes may be stated as follows: to provide that things shall be thought of in such groups, and those groups in such an order, as will best conduce to their remembrance and to the ascertainment of their laws." These analyses of the nature of classification bring us to three very handy laws governing the whole matter.

I have emphasized once before in this book a point as being of the most extreme importance. That was the point having to do with the possibility of a person's I.Q. changing at different times of life. I give you these three handy laws of classification and division, which I hasten to add are not of my devising, as a second vital piece of information. Store them carefully in your mind. They will be more than useful to you.

The three laws are these: in classifying and dividing any subject matter into its constituent parts,

1. The constituent species must exclude each other.
2. The constituent species must be equal, when added, to the genus.
3. The division must be founded upon one principle.

Now let me translate. If you are making an outline of certain material, Rule One is that no item can be put in any two places in the outline; it belongs in only one place, and you must find the place. Two, whatever the material is that you are classifying, there must be no unseemly gaps when you get finished. Every part of the material must have a place somewhere in the outline, and the whole outline when finished has got to add up to the whole of the subject matter that you are considering. Three, don't, above all, commit the sin which is probably the commonest sin of all bad outlines—that is, getting halfway through the outline, finding out that you can't live up to the two first rules and still classify the rest of the material, and so, as a poor feeble solution, changing the whole principle of the outline to enable you in some way or other to squeeze in the rest of the material, even though the way you squeeze it in makes no sense.

Let me illustrate. You start to classify Art, according to the sense to which the art appeals; and you make an outline which begins with:

Part I—Visual Art: painting, etching, lithography, engraving, etc.

Part II—Auditory Art, such as concert singing, instrumental music, etc.

Then you get to Theater, and you can't make up your mind whether Theater belongs with Number I or Number II, since it appeals both to the eye and to the ear. You, therefore, do

not, I hope, continue your outline by making it

Part III—Theater. If you do, you may be of that numerous, but definitely not respectable company who don't know the first thing about articulated thinking, since the first thing about it is to know how to make an outline.

This question of outline is anterior to the syllogism. One can't even start to think well if one doesn't have at least the glimmer of an idea of the difference between good and bad outline, and what makes one good and the other bad. I cannot tell you how many worthless reports I have seen submitted, in business, by intelligent and well-intentioned persons whose only fault was that they did not understand the principles of making an outline. They did not know the three rules, and so, quite naturally, they made bad outlines on which were based bad reports. They were uninformed. They didn't know how to classify a subject, and so their presentation of the subject, was, perforce, of no avail. I have known some very clever people to do this, not just once, but repeatedly.

It is from this utterly unnecessary error that I am trying to save you in thus laboring the point about classification, division, and outline. Learn the three rules. Stow them away. If you must commit errors in thinking, let them be adult errors, in difficult ·matters, not puerile mistakes issuing from an ignorance of three simple kindergarten rules. Mind you—and I must in all conscience keep repeating this—

knowledge and understanding of these three rules will not, in and of itself, insure all your outlines being models of perfection. It will simply help you to make good outlines. The close following of the rules, if coupled with a reasonable supply of pertinent information and intellectual competence, should result in outlines in which are present the medieval virtues of distinction and clarity. Without the rules, in the words of the medieval poet, " Abandon hope."

– 3 –

The Third Instrument : Semantics

Aristotle says, " Spoken words are the symbols of mental experience and written words are the symbols of spoken words. Just as all men have not the same writing, so all men have not the same special wants. But the mental experiences which these directly symbolize are the same for all, as also, are those things of which our experiences are the images."

It was to this passage that I referred when I said that Aristotle was cognizant of the nature of the semantic problem. The word *semantic* comes directly from the Greek word *semainein,* meaning, to signify. Semantics is the subject of signification or meaning. An understanding of the subject is indispensable to good thinking. It has been said, I think with some justice, that without the existence of language, there would be no thinking, in the general meaning of the word *thinking* as we use it.

When you use words, you are in a position analogous to that of the traveller in a strange land. This strange land has its own medium of exchange. If you do not understand the *coins*, which form the medium of exchange, you will very probably be misled, and very possibly be cheated. You must know the different coins and what they stand for in order to enjoy a fair chance of getting your money's worth out of any medium of exchange. It is particularly clear, in this case, that if you know the different coins and their values, you are by no means sure of getting your money's worth, but if you don't know them you're as nearly sure as can be of not getting it.

Coins, as you are aware, are symbols. They stand for certain values in real goods—bread and shoes and houses. You never make the mistake of thinking that the coins are the things for which they stand. Not even the most astigmatic individual has ever mistaken a five-dollar gold piece for a pair of shoes. But in the field of human communication, where the symbols are words instead of coins, people very often make the mistake of transference ; that is, of thinking that the symbols actually are the things for which they stand. This is only one of the many sources of confusion arising from the fact that in the field of communication we must deal in symbols—in linguistic symbols of language—since the real world in which we live is not in a negotiable form for thinking and must, therefore, be represented by symbols which are negotiable.

Many men since Aristotle have recognized these truths and a few have written about them. They were not to my knowledge adequately written about until the recent advent of a genius in the person of a Polish mathematician. This mathematician's name is Korzybski. He is living in the world today. He is, may I repeat, a genius. The word *genius* is linguistically a coin which has become debased through much usage. It is a word, therefore, which one should be chary of using. There have not been many geniuses in the history of the world and at any given point in time, the number is so sharply reduced as to insure a sort of majestic loneliness to members of that particular class.

I have said that Korzybski is a genius. If you are the average reader, to whom I originally addressed myself, you must, for a time, take my word for this. If it be only a short time, which is what I hope for, it will be simply until you have implemented yourself in the armory of thinking to the point where you can read Korzybski with understanding and yourself take his measure. If it be for a longer time, posterity, as is its custom, will perform this service for you, posthumously : that is, long after you will be unable to reap the benefits.

This brings me to a digression, having to do with a truth that I learned, somewhat slowly, in business. Ever since I have been in business I, like many others, have been interested in the great business parlor game of sizing up other

businesses. I like to be able to make up my mind about whether particular companies are, on the whole, good or bad companies. This is not in order to be able to buy or sell their stock, which is an equally good but a different game. It is in order to learn something about other companies that I can profitably apply to my own.

Anybody who has a vague understanding of a balance sheet and an operating statement can form from it a general opinion as to whether a company has in a given period made a profit, and how that profit relates to the other phases of the company's operation. He can, from the same limited evidence, infer, for a limited period of time, future smooth or rough sailing for the company, based on conventional interpretations of such items as the relationship of assets and liabilities, amount of earned surplus, or size of working capital. But these cold figures, as all who look at balance sheets know, do not begin to reveal the true inwardness of a company's position or prospects. We like to know other things about the company—how large is its market, is it an expanding or a contracting market, how large a proportion of the potential market does the company already pre-empt, what of competitors, does the company have an able personnel, are its methods efficient, and so on, for as long a list of questions as one man may have the patience to compose or another man to read.

The point I am driving toward has to do with the method of evaluating the answers that you

may obtain from such a long list of questions.
Very evidently you will get a mixture of answers :
favorable, indifferent, and unfavorable to the
future outlook of the company.   I find that it is
the habit of many (but not all) industrial engi-
neers, crystal-gazers, stockbrokers, and general
camp followers of industry to judge companies,
in the net, not by what is right with them, but
by what is wrong with them.   This is the very
center and core of what I am aiming at.   I am
trying to suggest that, in general, enterprises of
all sorts and of any sorts should be judged in
exactly the opposite way.   The really central
question is, not what's wrong with them but
what's right with them.

I have seen companies, and so have you, if you
stop to think of it, with so many things wrong
with them that in all reason you couldn't see how
they could keep the vessel afloat, even if they
kept three eight-hour shifts at the pumps.   Some
of the holes were not only big, but were below the
water line.   But the curious thing is that they
had the men and they had the pumps and they
not only stayed afloat, they arrived at where they
were going.   Hence I conclude that the central
question was not what they had wrong with
them, but what they had right with them.   My
reasoning, as outlined above, is not sufficiently
rigorous to satisfy a proof in Euclid, although I
believe I could amplify it into a defensible
position.   But just now I am less intent on
proving the proposition than on emphasizing
the point.

The point is that the soundness of a venture is more often to be rightly determined by a correct appraisal of its assets than by an exclusive regard for its liabilities. Of course, if its liabilities are overwhelming, it will go under, but overwhelming liabilities usually become apparent so quickly that the world is not long fooled.

What I have been saying of companies seems to me to be even truer of theories. Men are by nature reactionary, and their first instinct is to find out what's wrong with any new theory. As a second step, this is necessary and desirable. As a first step, it tends in the direction of intellectual boobery, and pettifogging, and emulation of the ostrich. I find that much contact with this attitude works unwholesome changes in me. It incites me to an act that doctors, I believe, identify as reverse peristalsis.

Count Korzybski has crossed the myopic field of vision of certain of these camp followers and pettifoggers. They have seen him "as through a glass eye, darkly." They have discoursed at length, but not eloquently, about his faults. His virtues they have not seen; therefore not understood; hence not recorded. He has written a book, *Science and Sanity*. It is a great book, very badly written. It is written in what he assures me is English. I have urged him to translate it into ordinary English, omitting no less than one half of the words from the original. I continue to hope. Meantime I pause to point out that the failure to translate is our loss, not his.

Korzybski's theses are in the main these : words are not the things they stand for. Through this and that reason people either don't know this or forget it, and thus lead parts of lives, or even entire lives, in the light of words, not in the light of reality. Words, says he, being abstractions, not only are not the things they stand for, but unavoidably and invariably omit a certain number of the characteristics of the things for which they stand. Words, further-more, represent different degrees of abstraction—high-order abstractions, as he calls them, and low-order abstractions. " Fido " is a first-order abstraction. That is a word standing for your dog. " Dogs " is a second-order abstraction, standing not just for your dog but for all dogs, and the connotations of the symbol are less inclusive of the characteristics of the class than the connotations of " Fido " are of your particular hound. " Animals," to pursue the sequence, is a third-order abstraction, leaving out more details than " dogs," which in turn left out more details than " Fido." And so you go, until you reach the really high-order abstractions, like " truth " and " justice " and " wisdom."

Words have other peculiarities which mislead us to our hurt. They are multiordinal, in Kor-zybski's term. Incidentally, this is straight out of Aristotle, who classifies words as being univocal and equivocal. Multiordinal, or equivocal, use of words leads, of course, to misunderstanding and error.

Words, propositions, and arguments are also used to construct what we have previously described as scientific fictions. Korzybski brands this use of words as elementalistic, and he contrasts the elementalistic view of subject matter with what he calls the structural view. He makes the point, and very usefully, that these fictions can be harmful as well as helpful, and that they are not always used knowingly. That also is traceable back to Aristotle.

I keep mentioning Aristotle as a source. This is not because I am disturbed at his not receiving, in every instance, the credit due him. It is rather because I think it so important for us to keep remembering that even new articulations, such as *Science and Sanity*, employ many basic concepts having their roots way back in antiquity. Again I remind you that much wasted time and many errors are avoidable by the man who is willing to acquaint himself with the writings of some of the early great thinkers. Korzybski did a fabulous amount of research and reading in preparation for his book. He perused Aristotle, but if he had really *read* Aristotle he would not have described *Science and Sanity* as a non-Aristotelian system; for one reason because he would have found agreement in Aristotle on many of the major themes elucidated in *Science and Sanity*.

I would not willingly mislead you into believing that this truncated condensation, or to use Korzybski's word, abstraction, from his astonishing seven-hundred-page book, *Science and Sanity*,

can begin adequately to convey a picture of what his genius has produced, or indeed fail to do it violence. But the book is available at a reasonable price and, again, I wanted nothing more than to give you an idea of its important thesis.

I referred earlier to another book on semantics, by Ogden and Richards, called *The Meaning of Meaning*. I shall not attempt even to outline the contents of this book which, in any case, is subordinate to the great work I have just been trying to describe to you, but I will quote one clever diagram from the book.

The authors show a triangle without a base. At the right-hand point of the triangle they print the word *referent*. At the apex are the words *thought or reference* and at the lower left-hand corner the word *symbol*. They are attempting to convey in this diagram not only the fact that the symbol is not the thing it stands for but some picture of what its connection is with the thing for which it stands. Their point is, of course, that the connection is not, in language which we have used earlier, *immediate*, but is *mediate*. The original thing, or referent, is connected directly only with thought. The symbol is connected directly only with thought. The symbol and the thing, having no direct connection, are joined only through the mediation of thought. The value of the diagram, which is limited, is only to indicate, in a graphic way, the possibilities of omission, distortion, and error in the using of a symbol to refer to a thing which it cannot

completely represent.   Korzybski has, for this pur-
pose, instead of a graphic, a tactual device, which
is a much more realistic but unfortunately less
readily available explanation of the same phe-
nomenon.   This device is a piece of wood with
loose strings hanging from it.   Korzybski calls it
the "structural differential."   He uses this to
demonstrate in classes, different levels of abstrac-
tion.   The loose strings, hanging from different
levels of the device, represent those characteristics
of the original object which become lost when a
word or symbol is used to stand for the object.
The levels themselves represent different levels
of abstraction.   Korzybski states that, from his
observation, the frequent sight and handling of
this device by students impress on their minds,
as can be done in no other way, the real nature
of the losses and distortions inherent in the verbal
process of abstraction.

Ogden and Richards have in their book another
point which I think is particularly deserving of
comment.   This has to do with the two ways in
which words can be used.   One they call "pur-
posive," the other "emotive."   They might, with
equal correctness, have made use of the terms
logical and *rhetorical,* but I would readily grant
that the words they chose are more descriptive
of their meaning and seem to have somewhat
more completely the desired connotation than do
the classic terms.   Ogden and Richards are at
some pains to show that words used emotively
are out of place in honest analysis and tend to
becloud the issue.   They show, too, that the

science of words calls for two different techniques of study—one for each of the two ways of using words. The concept and the terminology are both, to my mind, useful.

Now semantics, in a nutshell, is this : we converse only with words and think mainly with words. Words are themselves inadequate vessels to bear the cargoes with which they are laden. Through their inadequacies we suffer many faults in thinking. We engage in idle arguments wherein the contestants come finally to realize that they are talking about words, not things, and that if they will only define their words they will find themselves in agreement, not in disagreement.

There is one other time-saving insight of Korzybski's. He calls to our attention the fact that defining terms is all very well, but is not in all cases to be done too technically. His thought, and it's a true one, is that if two people in conversation are reasonably sure that, without having been able to raise a definition to the verbal level, they are still attaching substantially the same values to a word or symbol under consideration, that is all that is really needed. They are on a satisfactory basis of common understanding and should leave it at that rather than pursue a tortuous course of wordmongering in a desperate purist effort to achieve a definition satisfactory to Webster.

A part of Korzybski's work that I find interesting is still, in my opinion, too inchoate to discuss here with profit. It is what he calls the " negative

system of reasoning." It is entirely based on the theory that the copulative "is" has created immense technical difficulties in formal logic. Korzybski reminds us that these difficulties are semantic in character and should be avoided, wherever possible, by use of "is not" instead of "is." If you were familiar, for instance, with the appearance of the species *horse,* and saw, for the first time in your life, a donkey, you might want later, in describing the experience to a friend, to make an assertion about this strange animal you have seen. Korzybski suggests that the assertion you can make with the greatest certainty is that you saw an animal and it *was not* a horse. From this he builds up suggestions for constructing arguments from negative propositions. Personally I incline to doubt very much whether this will ever develop into a system anywhere near complete enough to be a new instrument of thinking. Certain it is that for the time being, at any rate, it is still in the incubator and not yet fully hatched. My guess is that it will end up by being a useful generalization about certain special kinds of propositions—and no more.

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The Fourth Instrument : Voluntarist Logic

A long time ago, another of these ubiquitous Greeks, named Heraclitus, discerned some of the uncertainties arising out of semantic difficulties. Ever since then, men have, from time to time,

found occasion to comment in one way or another on some of the limitations of formal logic and on the difficulty of establishing useful connections between formal logic and real life. One of the leading modern exponents of this legitimate school of criticism is Professor Schiller. In the preface of his book, *Formal Logic*, the professor says : " For over two thousand years formal logic has been a stock subject of academic instruction. It has been established and endowed with a multitude of official defenders chosen from the ablest and acutest intelligence the human race has produced. Its subject matter, moreover, is so far from being recondite that it should be familiar to every rational being. It professes to study an operation everyone professes to perform habitually, viz., thinking, and to explain how we ought to think. It might be supposed, therefore, that by this time the subject of logic was completely explored, that every embellishment of technicality had been added and every logical question settled beyond the shadow of a doubt. Instead of this, what do we find ? Not only that ordinary human thinking continues to pay scant respect to logic but that the logicians themselves continue to differ widely....In common with most teachers of formal logic, I have found it a very difficult subject to teach without loss of self-respect. It is so constantly seeming to be necessary to slur over the real difficulties to which the traditional doctrines conduct honest thinking, to palliate masses of inconsistencies in what professes to be a logic of formal consistency, to

refuse arbitrarily to pursue the problems raised on the plea that they extended beyond the field of logic into metaphysics or psychology, and to draw the line between the logical and the extra-logical in a wholly illogical manner. All logicians I believe have felt these difficulties more or less and seen that nothing is easier than to attack and condemn formal logic with its own weapons."

This is pretty strong medicine and from a strong medicine man. He is a seasoned and recognized scholar, an experienced teacher, and, what is more, not only a logician, but a philosopher. His philosophical pedigree, to help you place him, is out of William James, and in his theory of logic, his thinking may be compared with that of John Dewey. I am going to sketch briefly the gist of Schiller's theory. I am also going to point out what part of it I think is right and what part is wrong. Since there is no monopoly on the commodity of error, you may very possibly discover some of it in my critique on the errors of Professor Schiller. This I must risk. It is one of the occupational hazards of making judgments.

In *Formal Logic*, Schiller claims that he has been able to " pull down the pseudo-science of formal logic and to show what an incoherent, worthless and literally unmeaning structure it is." He has not only been able to do this, he states, but has also been able " to prove the case against formal logic formally and dialectically. " That is the substance of the four hundred-odd

pages of the book. He then wrote a second book entitled *Logic for Use,* which has a subtitle, *An Introduction to the Voluntarist Theory of Knowledge.* In the preface to this second book he says, " In my *Formal Logic* I undertook a radical criticism of the traditional logic by challenging the fundamental abstraction on which it is built— the abstraction from meaning. To the destructive criticism of formal logic, this book is intended to be the constructive sequel."

These two works form together a most valuable contribution to the theory of logic. They are not, however, in my judgment, in any sense whatsoever, a refutation of formal logic. They are not even in conflict with formal logic. They are simply an enlargement of the uses of formal logic by the proper inclusion, on an explicit basis, of two factors affecting the use of formal logic. One of these factors is semantics and the other is probability. We have already given· some space to the former of these. The latter deserves now some attention.

The subject of probability and the problems a study of probability brings in its train are matters most abstruse and difficult. Mathematicians have spent lifetimes exploring its secrets. Our practical need for this book is to see if we can extract from the voluminous writings of the mathematicians and philosophers some few simple insights about probability which can without elaborate study be applied to daily living and daily thinking. You know, it is a

curious thing that practically every act we commit is based on probability, not certainty, and that in spite of this ineluctable condition of living, there are not very many people who can answer intelligently the question: What is probability ?

Just stop a minute on that thought. We said, some way back, that there are a lot of people engaged in thinking for high stakes who couldn't name the instruments of thinking. We indicated farther on that there were also quite a number of people who were freely passing back and forth the coinage of thinking, that is, words, without having any very definite idea of the value of the coins or what they stood for. We had occasion to point out in another place that the all-important technique of classification was to many people an unknown mystery, and when I say unknown I don't mean unsolved : I mean unknown in the sense that it couldn't be solved because they didn't even know that there was such a mystery.

Now we are engaged in indicating that men live and die by decisions based on probability without knowing in any articulate way what probability is. When I opined at the outset of the book that there were things to be learned about thinking—things which could lead the average person to better thinking—I submit that I furnished an admirable example of under-statement of the case. It must be clear from the matter we have so far considered in the

book that men by and large live ignorantly and dangerously and that an effort to acquaint themselves with the grammar of thinking is not so much a measure of self-improvement, to be taken or left at will, as it is a bottle of medicine needed to cure a capital disease. This book would have no point at all if I did not make clear my belief that too many men are fallen sick of the disease of bad thinking. I suppose this is the right place for me again to register my awareness that I in common with all the rest have long suffered from the disease and that I consider myself now, at best, to be only recuperating—not cured.

We return to the question : What is probability ? Probability, if you will take my word for it, is the degree of credibility of a particular proposition. This, and absolutely nothing more. I have tried to give you a rigorous definition, but I want to discuss it further to eliminate any possibility of misunderstanding. As far as I can make out, most people believe that probability has to do with the likelihood of something happening or not happening. I repeat, it has nothing whatsoever to do with that. One of the best ways I know to drive home this particular point is to take an example from past events— from the field of history. When Julius Caesar was assassinated by a band of senators, he is said to have been stabbed 26 times. Now there is no proof, in the scientific sense, that the correct number was 26, 27, or 28. The question is: which of the three numbers is the more probable ?

Julius Caesar was assassinated in 44 B.C.   Whatever you may think now as to the number of times which he was stabbed is not going to alter the fact one infinitesimal mite.   Let us assume that Caesar actually was stabbed 26 times.   Your choosing to believe in the number 27 is not going to change that fact.   If, however, someone were to write a scholarly treatise pretending to prove that new and hitherto unconsulted sources indicated that 27 was the correct number, you might take the researcher's word for it and from that time believe in the 27.   You would then say, " A recent study shows that Caesar was probably stabbed 27 times instead of 26," and you can see that in that use of the word *probable* what you are referring to is credibility, not actuality.   You are saying, " I believe he was stabbed 27 times not 26 times."

For some strange reason, however, when people consider future events instead of past events, since the course of future events is thought to be variable and not fixed, they tend to fall into the error of thinking that probability has to do with whether an event actually will or will not occur, instead of remembering that probability refers just to degree of credibility of future occurrence.   The distinctions I have been making between likelihood and credibility would, if properly understood, change the course of many people's thinking and action.

Schiller's concern with probability is different. Formal logic is, at least in its deductive aspect,

put forward as the science of necessary and valid reasoning. Schiller says that's ridiculous. There is no such thing, in any absolute sense, as necessary reasoning. Necessary reasoning is necessary only in a relative sense—relative, that is, to the speaker and his frame of reference and to the listener and his frame of reference. All you can have is higher and lower degrees of credibility. Most living and thinking are based on probability rather than certainty. Any logic which is a logic for use should comprise in its process systems of thinking that lead to probable conclusions : conclusions, that is, which though not necessary in the formal sense, still are probable. Actually Schiller does not say it in precisely this way—it's one way he might have said it had he wanted to make this point clearer than I think he did.

Schiller owes, and freely acknowledges, his debt to William James in at least two ways. Schiller is a pragmatist, and James is the great modern exponent of the concept of pragmatism. Schiller is also a pluralist, and James is the modern father of pluralism. Pragmatism is the attitude which implies, among other things, that since all living is purposive and the purpose of living is to obtain more human good, philosophy is an empty study unless it teaches men actually how to get more good for themselves in their own lives. Pragmatism is the practical assertion that the test of a theory is : does it work? Pluralism is the concept which recognizes many ways of achieving one end and that the

important thing in life is not so much to find the one right way as it is to find any way that will work. Pluralism makes the practical admission that different ways do work at different times and for different men.

These are certainly both practical ideas, and Schiller, being a practical man, likes them, uses them, and helpfully enlarges the science of logic by sketching the outlines of a pragmatic, pluralistic logic which, still, whether he likes it or not, stems from the old formal logic against which it is in revolt. Schiller's book, *Logic for Use,* in which he elaborates these ideas, contains some four hundred and fifty pages.

I have tried conscientiously to indicate to you those instances in which I felt that my outline of a theory or of a book failed adequately to represent the full import of the original. Hence I feel quite free to tell you that in the case of voluntarist logic I think that I have saved you eight hundred and fifty pages from the writings of the founder and a good many more thousand from his precursors and similarly minded contemporaries, without having deprived you of anything except the cement which holds the bricks together. I would say that both of Schiller's books are worth reading. There is no doubt whatsoever in my mind that James is worth reading. Still, if all you want, for present purposes, is the milk out of the cocoanut of Schiller's logic, I think, unless I have erred grossly, that I have given it to you.

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The Fifth Instrument : Symbolic Logic

To understand the significance of the processes of symbolic logic, you must understand the relationship between logic and mathematics. Mathematics is a special form of logic, logic being the general and comprehensive science of reasoning, and mathematics being that branch of it which performs its operations not with general language, but with special symbols and, in part, special techniques of its own. X, Y, Z, in algebra, are familiar symbols used to represent unknown quantities. Coefficients of powers, such as X^2, X^3, X^n, are special symbols used to represent the idea of X multiplied by X. The signs of $+$ (plus) and $-$ (minus) and $\div$ (division) and $\cdot$ (multiplication) are the arithmetical symbols of concepts which require many words for their description. Thus you see that mathematics is a kind of intellectual shorthand. If you want to consider a striking example of the value of this shorthand, consider the difficulty of performing with the written word the operation represented by the process of long division. It is quite clear that without the use of mathematical notations, the labor of dividing one large figure by another large figure is very nearly prohibitive.

Ordinary, conventional mathematics has developed certain processes of logic particularly adapted to its own subject matter, which are innovations of the greatest possible value. It

is the theory of the symbolic logicians that if
these mathematical notations and disciplines are
applied properly to the whole range of formal
problems contained in logic, and to a great many
of the material problems which logic attempts
to solve, that as novel and astonishing progress
might result as has previously been obtained
from the exploitation of mathematics within
its more conventional and orthodox limits. The
possibility of the idea bearing fruit is very real,
but so far as I am concerned quite unpredictable.
In symbolic logic you eliminate certain semantic
difficulties and incur others. You employ a
special language which has its own special value,
but which has, too, for the average, no, even for
the more than average intelligence, great and
real obstacles.

Symbolic logic, just like the other systems,
has quite a history. I suppose that, in a way,
Aristotle might be said to have been a symbolic
logician, although I think the description would
be somewhat misleading. He did, however, use
mathematical demonstrations and methods in
investigating certain subjects. From his time
up to modern times, many other thinkers have
done the same. The reason that none of these
people are really properly described as symbolic
logicians is that your true symbolic logician does
not use mathematics merely to solve a problem
or to prove a point. He constructs out of it an
entire, complete and internally consistent system
of logic, embracing all others. So far as I can
determine, the first mathematician ever to do

this was a man named George Boole. Between 1847 and 1854, he published four works on the subject, of which the principal one is entitled *An Investigation of the Laws of Thought.* His opening sentences in this work are as follows: "The design of the following treatise is to investigate the fundamental laws of those operations of the mind by which reasoning is performed; to give expression to them in the symbolic language of a calculus and upon this foundation to establish the science of logic and construct its method; to make that method itself the basis of a general method of the application of the mathematical doctrine of probabilities, and finally to collect from the various elements brought to view in the course of these inquiries, some probable intimations concerning the nature and constitution of the human mind."

You will agree, I presume, that this is not an unambitious project. The project is carried out with what appears to me to be a high degree of internal consistency and skill. I must confess, however, that I have been unable to find in the work any device of thinking not previously known to me, which upon study of the book seemed to me to be novel and useful. The novel devices didn't seem useful, and the useful devices didn't seem novel.

A follower of Boole's published in 1894 a book called *Symbolic Logic.* The name of the author is John Venn. Venn amplified, in a scholarly and most laborious way, certain of Boole's

concepts, without, it seems to me, in any way overcoming the basic objection I described myself as experiencing after a reading of Boole.

Then, along in the twentieth century, comes a magnificent and impressive work, *Principia Mathematica,* by Russell and Whitehead. These two gentlemen, at endless expense of time and effort, constructed still another complete system of symbolic logic based on their own private system of notation instead of the ones that had gone before. A simpler statement of theory is to be found in Russell's book, *Principles of Mathematics,* which was the precursor of the above-named monumental work. It would take you quite a long time to learn the language of *Principia Mathematica* and quite a lot longer to encompass the first reading of it. What you would have after you finally achieved the first reading, I do not know. If your reaction was similar to mine, I think you would have a mixture of the most intense admiration for the intellectual power which made possible this tour de force plus a rather firm conviction that it had not materially helped you to improve your own personal art of thinking, and yet I know this appraisal is too penurious of praise.

Principia Mathematica is a great achievement of the human mind. It reduces all mental operation to a mere handful of original processes, but I still have to admit that when I get through recognizing that fact I don't know what to do with it, and I am just enough of a pragmatist

to feel a little cheated. It is as though you asked to be given ten dollars' worth of silver in exchange for a ten-dollar bill, and the bank teller gave you ten crisp, shiny, new one-dollar bills. They are perfectly good. You haven't really been cheated at all, but what you wanted was silver.

You may wonder, in view of all this, why I included symbolic logic at all as an intrument of thinking. I included it first in order to furnish myself with an occasion to explain the affinities of logic and mathematics and to remind you that you need not be a symbolic logician in order sometimes to recall and act upon the knowledge that certain types of problems are best solved through the employment of one or another of the techniques of mathematics.

My second reason for including it was that I still consider it possible, if not probable, that some skilled practitioner of symbolic logic will indeed make an important and unpredictable discovery about the art and science of thinking in general.

I included it, lastly, because in attempting to describe the whole range of the activity of thinking I could not well omit a brief display of that perfectly extraordinary and unique curiosity known under the title of symbolic logic. If you wish to understand just how curious the subject can become, I might say that the aforementioned Boole (who, let us be clear, made great and significant contributions to the art of mathematics

even though his contribution to the general art of logic seems more questionable) actually constructed and used a mechanical gadget called a thinking machine. He reduced different kinds of basic propositions and the possible connections between them to notational symbols and then put them on an elaborate machine, very much resembling a modern mechanical-control panel, consisting of handles, plungers, and levers. If you wanted to know whether a proposition of the A Type and a proposition of the B Type could legitimately lead to a conclusion in a proposition of the C Type, all you had to do was push some buttons and pull some levers and the machine did the rest. It was actually Boole's hope that a general and widespread use of this machine would eliminate many of the human ills attributable to faulty thinking.

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The Sixth Instrument : The Continuum

The best down-to-earth explanation that I know of the use of the continuum for practical thinking is found in a volume by Boris Bogoslovsky, *The Technique of Controversy*. The subtitle of the book is *Principles of Dynamic Logic*. I think I can almost hear you remonstrating at his point about how many logics does a man have to learn in order to learn how to think better ? I warned you, however, at the outset, that modern logic is to some extent in a state of anarchy and

chaos, with the leader of each school of so-called logic claiming that his is not only the best but the only.

I said originally I would undertake, if you would bear with me, to do two things. I said I would keep the technicalities to a minimum, and that I would endeavor, after listing the different systems, to provide you with a workable reconciliation that would enable you, with practice, to use each instrument according to its uses and to merge all of them into a united organon, or single art of thinking.

I want to quote to you the opening sentence of *The Technique of Controversy* : " Almost every one who is interested in philosophy, politics, education or any of the other so-called inexact sciences, has experienced a feeling of deep disappointment, almost despair, before the limitations and inefficiency of our reasoning." This gets to be almost like the refrain from a Greek chorus: Aristotle, Korzybski, Schiller, Boole, and now Bogoslovsky, all descanting on the inefficiency of reasoning and the inadequacy of previous systems. The strange truth is that every single one of them was right. You might hazard a reasonable guess that about the year 4,000 some new prophet will again raise his voice in the same dirge, and he too will be right.

You will remember that of the four possible objections to a philosophical proposition the fourth is, " Your analysis is incomplete." I pointed out that this is a criticism which can

be levelled at all analyses, and it doesn't, therefore, constitute so much an expression of disagreement as it does a request for further elucidation. "Your analysis is incomplete" will be a valid comment on every proposition until the ultimate crack of doom. It is this desire for completeness which is the burden of the song of each of the five thinkers enumerated when they give cry to their feeling of a need for a better method of thinking. Herein lies the secret of the reconciliation that I think is to be effected. I think the true import of their song is: "Your analysis is incomplete," but they generally don't express it that way. They seem generally to express it incorrectly by saying, "Your analysis is incorrect." The different systems being considered are really not in opposition to each other; they are only what is called *in extenso*. After I have described to you the nature and use of the continuum, I think you will perceive, almost without any further analysis, the real absence of opposition between the systems.

I think I will give you, in Bogoslovsky's own words, the four principles of dynamic logic:

The Principle of Polarity: "Every unit of thought in rigorous thinking must always have its definite and explicitly expressed opposite. An A must never be used apart from its non-A."

The Principle of the Partial Functioning of Concepts: "A complex concept in actual reasoning at a given moment never functions as a whole but only in a certain aspect. Which aspect

is put into operation is determined by a pair of opposing concepts. In cases where a concept functions as a component of a previous experience it is one pole of the pair. In cases where a concept functions as a present experience, both poles of the pair are extraneous to it. In efficient thinking, these pairs must be explicitly expressed."

The Principle of Continuity: "The essence of dynamic reasoning is the establishment of continuity between two opposite poles of a unit of thought, which tends to terminate in a realization of their qualitative identity. Efficient thinking must start with an assumption of continuity in potentiality and work for its actual realization."

The Principle of Qualitative Indices: "No statement has any definite meaning without a certain qualitative index. In efficient reasoning, the qualitative value of any unit of thought must be expressly indicated, preferably in terms of objective continuous scales between the two poles of the opposites."

Well, this is pretty fancy. What is he getting at? He's getting at something of this sort: when you think of a positive term such as *true* or *white*, you should, before using that term in a sequence of thought, immediately think of its opposite, such as *untrue* or *black*. You should think of *white* and *black* as being points at the opposite ends of a line and in between these two points, a graduated modification of *white* and *black*, going through all of the gradations from

light gray to medium gray, to dark gray, to very dark gray, and so on. Instead of describing something as being gray you should, according to Bogoslovsky, try to describe it in mathematical terms locating its exact position on the line between the two poles. If the line were six inches long, with black at one end and white at the other, the most perfect shade of gray would be exactly three inches from each end.

When Bogoslovsky talks about qualitative indices, he is trying to get you to give up the word gray and substitute for it this notation, designating a shade of gray equidistant from the two poles. Don't, however, confuse this with symbolic logic. Bogoslovsky knows symbolic logic, but his system is different from it, not in degree but in kind. He says that a great deal of error arises out of disputes as to whether a proposition is true or untrue. He wants you to resolve most of these disputes by pointing out that the proposition is neither true nor untrue. It has in it some proportion of each, and the way to understand it correctly, as a proposition, is to locate it accurately on the line or continuum connecting the polar opposites of truth and untruth. He says that the richer you can make the continuum, that is, the shorter the marked-off units, and the larger the number of those units, the more cogent your reasoning will be. This simply amounts to saying that you can measure more accurately with a ruler that is marked off to sixteenths of an inch than you can with one that is only marked off with quarters of an inch.

This concept of Bogoslovsky's is not all-embracing, but it has great practical use. We human beings are faced with certain problems that we desire to solve. One way of solving a problem is by eliminating it ; that is, by showing that it is not a true problem at all. One of the commonest forms of false problem is the problem of the false dilemma, such as the one noted above (namely, is a certain proposition true or false ?). If you can show that the proposition is neither true nor false, but simply contains certain proportions of truth and falsity, and if you can then further proceed to demonstrate what those proportions are, you have accomplished the useful process of solving a problem by eliminating it.

Bogoslovsky's book is, for my money, a good one. I recommend your reading it. Bogoslovsky's book is over two hundred and fifty pages long. I think I have given you the gist of it in four pages, but it is not, as in all these cases, an adequate substitute for reading the original. You miss, in any précis, such as mine above, the context, the elaborations, and the overtones of the original. In a good book, these are worth getting.

– 7 –

Postcript About Instruments

The first instrument of thinking we analyzed was the instrument of intuition. Then we

analyzed five instruments or systems of conscious reasoning. I was very much tempted to go on to a seventh instrument, which I might have called " trained intuition." I was deterred from doing this by the realization that if you had read carefully thus far, you would have criticized the seventh item, and rightly, as an example of faulty classification.

No one knows, as I stated before, exactly what intuition is. My own impression is that it consists of a completely interwoven and speeded-up duplication, at the subconscious level, of two or more of the patterns of thinking which we have been describing in the five systems of reasoning at the conscious level. I am not sure just how limited this intuition can be in an individual, although I suspect that there are stupid people, not quite dull enough to be classified as morons, who do practically all of their thinking, at both conscious and subconscious levels, solely by the use of analogy and deduction. I would guess that the next more intelligent class of individuals add to this some limited use of induction. I know that there are many distinctly intelligent people who seem never to have entertained a suspicion, either consciously or subconsciously, of the existence of different kinds of fallacies, or of semantic difficulties, or of the continuum.

It should be apparent, hence, that when I was tempted to put in " trained intuition " as a seventh instrument, I had in mind the vast difference between intuition employing only

analogical and deductive processes and intuition which makes use of all the instruments. These two types of intuition would, of course, differ sharply not only in the processes they used, but also in the fertility, variety, and dependability of the conclusions that they reached.

The first kind of intuition is the source process of all thinking. The second kind is the source process of artistic thinking. Now since more artistic thinking is the entire lesson that this book is trying to make it possible for a person to teach himself, you will easily understand that I felt I could not close any consideration of the instruments of thinking without outlining the advantages inherent in a trained intuition. Here again, it is necessary not only that I point out to you the existence of trained intuition, but also that I provide some hint as to how you may help yourself go about acquiring it.

You must think about the different instruments of thinking until you feel that they have become deeply imbedded in your mind. You must practice using the instruments consciously. After many trials of practice, you should gradually find that they are becoming integral and subconscious parts of one act of thinking rather than the artificial, disjointed, and several actions that they must be at the outset of your experimenting.

Finally I must not leave this chapter on the instruments of thinking without registering specifically my complete awareness of the two

possible objections that I think can be levelled
against the list. I do not expect to be accused
of having been either uninformed or misinformed
in this listing, although, of course, both are always
possible. I do expect some criticism to the effect
that my analysis is incorrect. As I mentioned
to you earlier, I seemed, in writing this chapter,
to find myself between the horns of a dilemma,
in such a way that if I addressed myself to the
ordinary man I would be impaled by the scholar
and vice versa. It may be a false dilemma. I
don't think so. At any rate, I have explained
my reason for choosing the ordinary man as my
audience. Mind you, I do not consider the
analysis to be incorrect. I am merely engaging,
in advance, in the auctorial malpractice of re-
butting an anticipated criticism, which I am
taking this opportunity to suggest as being
understandable but not necessarily justified.
I make this rebuttal not at all for the
sake of winning an argument but in order to
help you resolve any possible confusion in
your attempt to understand the instruments of
thinking.

The second criticism I level against the list
myself. The analysis is incomplete. If I knew
of more instruments of thinking, naturally I
would include them ; but it is important, in the
absence of any present-day knowledge of more
instruments, that the list be left open-ended,
so that if more are discovered they may be
added and incorporated into your system of
thinking.

For your handy reference I close the chapter with a check list.

Instruments of Thinking

1. Intuition
2. Formal Logic
3. Semantics
4. Voluntarist Logic
5. Symbolic Logic
6. The Continuum

(7. Trained Intuition—properly a subdivision of Number 1)

General Rules for Better Thinking

NOVICE GOLFERS, having learned the names of the different clubs in the bag, proceed next to study certain general rules for the use of all clubs, and finally to study certain special rules for the most proficient use of each individual club. Thus, intending golfers must learn, under general rules, the need for always keeping the eye on the ball, always swinging rhythmically rather than jabbing, always pivoting, always following through. Under special rules the student golfer will be taught the technique of the mashie chip shot, the explosion shot out of a sand trap, the special use of the putter.

The analogy is almost perfect. In the preceding chapter, we opened our discussion on the art of thinking by identifying and briefly describing the instruments of the art. In the present chapter, we will enumerate some of the more important rules governing correct general conduct in thinking, which might be compared with keeping your eye on the ball. In the following and final chapter on the art of thinking, we will give some special rules for getting the best result out of semantics, the continuum, and the other tools.

The first general rule for better thinking is: establish immediately your best possible priority of problem. Let me illustrate. We will suppose

that, for some strange reason, you decide you want to read Homer's *Iliad* in the original Greek. You must find a teacher who knows Greek and is willing to teach you. If you expect to have to pay for your lessons, you must first find the necessary money even before you go and look for the teacher. After you have found the teacher he will probably tell you that before he can proceed far with the teaching, you must obtain certain books on Greek grammar, composition, and vocabulary. If you complete all of these steps as indicated you will, after a certain period of time, be able to accomplish your original purpose of reading Homer in Greek. But, observe the priority of problems. One, money; two, teacher; three, textbooks; and four, reading Homer in the original Greek. Only an extraordinarily foolish person, faced with this set of problems, would attempt to solve it by skipping the first three steps and immediately going out and procuring a volume of the *Iliad*. Practically everyone would know that he would first have to take the three prior steps in the order indicated. Practically everyone would know, too, that if any of the three steps were omitted, the final objective would not be attained.

If the ordering of problems were always as easy as in the rather simple illustration I have just given you, much error would be averted. It is a sad fact that a proper ordering of problems is one of the hardest things in the world to do. Nevertheless, it is a case where any plan is better than no plan, and, therefore, the absolute primary

rule of good thinking is to establish the best possible priority of problems.

Enterprises of all sorts abound with individuals who are failures primarily because they have never understood the need for ordering their problems. I could give you literally hundreds of examples taken just from the field of business.

A buyer spends untold time and energy trying to persuade a seller to reduce the price on a certain article. The buyer's argument is that the article has not sold well at the retail price necessitated by the price the wholesaler asks, and the buyer argues further that if the wholesaler will reduce the price, the retail price could be correspondingly reduced, and the volume of sale increased. Let us suppose, for the sake of our example, that the vendor complies with the request and the buyer correspondingly reduces the retail price. The article is put on sale at the lower price and doesn't sell any better than it did at the higher price. What's the trouble ?

The trouble is that the buyer made a bad analysis and picked the wrong problem to solve. The buyer decided that the problem was to get the price lower, when actually the problem was something else. Possibly the article itself was intrinsically undesirable, or wrong in a detail of manufacture, or what was needed was to call the attention of people to the article through advertising, or any other of a long list of possible alternative solutions. The real point is that the buyer in question picked the wrong problem

to solve, actually solved it, and was worse off as a result. Had he devoted equal energy and ingenuity to tackling and solving the right problem instead of the wrong one, he would have benefited thereby instead of just wasting his time.

Let us take another example. A child is very sick. The ignorant mother goes to a drugstore and there asks to be sold the quickest and surest headache remedy, explaining that her child has a headache. The druggist pulls out four different popular headache remedies, and the mother poses herself the problem of which of the four she should buy. After lengthy consultation with the druggist, she decides on one of the four, buys it, goes back, and gives it to her child. During the day the child's headache returns. She gives the child more of the medicine to quiet it. Late that evening, the child dies. It dies of a burst appendix. It also dies because its mother solved the wrong problem. She spent all of her ingenuity trying to pick out the right headache pill (which she may well have succeeded in doing) instead of promptly sending for the doctor.

I am purposely giving you the most homely illustrations from everyday life, because I want you to realize, as I do, what frightful miscarriages of thinking and action result from a wrong ordering of problems or from a failure to order them at all. You cannot rightly reply that no one could be so stupid as to make mistakes of the sort that I have just been enumerating. They are made every day in the week, and every hour in the day, and, furthermore, to bring the point

home, I can practically guarantee to you that, in a more subtle and less obvious form, you yourself frequently make equally serious mistakes, for the same reason, but without necessarily at the time recognizing the cause from the effect.

You may also have in mind to say that this kind of stupid mistake does not call for any such pretentious label as *wrong ordering of problems.* These things, you may say, are simply dumb mistakes. Certainly they are dumb mistakes. But calling them that doesn't help to eliminate them. Have you ever been able to teach anyone something by asking, " How can you be so stupid ? " or telling him "You have just made a dumb mistake " ? Probably not. What you ought to do, if you are really trying to teach him something, is not only to tell him what the mistake is but what process to pursue in order to avoid similar mistakes in the future. Well, that's exactly what I'm trying to do now. I am saying that people for various reasons all too often tackle the wrong problem, that this is a mistake, and that the way to avoid it is to have in your mind a general and extensive hierarchy of problems, so that at any given point in time you may enjoy some moderate confidence in the belief that you are tackling not only the right problem but tackling it at the right time. A little later on we will discuss the only remaining question, and that is tackling it in the right way.

Let me give you, out of my present experience, a very excellent example of a somewhat difficult

problem in the ordering of problems. I had great trouble in deciding whether I should present first to you the material in this chapter, which has to do with general rules for better thinking, or the material in the next chapter, which has to do with specific rules for the use of the instruments of thinking. My difficulty arose out of a genuine dilemma. If you don't know the general rules first, learning to apply the specific rules won't necessarily do you much good, on the simple grounds that if you think well but about the wrong problem, thinking well won't help you much.

On the other hand, and here's where the dilemma comes in, it requires the most skilful and understanding use of the instruments of thinking for a person to establish properly a priority of problems. Therefore, there is a very real question as to what the value is of recommending to you as the first rule of thinking, setting up the priority of problems, when I have not yet explained the rules for the use of the instruments of thinking which must be well employed to set up such a priority. My solution was, as you see, to give the general rules first and then to indicate some of the more specific skills that you could acquire to apply to the general rules.

I'm not at all sure that I was right in this decision, and I want you to realize that in addition to being, as I said, a difficult problem in the ordering of problems, this was a practical and not an academic problem. My decision will have practical results. It has been well demonstrated

that many people can learn lessons in one order
and be totally unable to learn them in another
order.   Since this book is a practical venture
in teaching, if I choose the wrong order of les-
sons, I may defeat my entire purpose.   I don't
want to do this, because this book represents
very considerable effort on my part, pointed at
what I consider to be a very worth-while objective.
When, therefore, I found myself faced with a
dilemma at this point in the writing of the book,
I did what I suggest your doing in comparable
circumstances.   I stopped, reflected carefully,
used all of the instruments of thinking as well as
I was able, and then, and only then, reached a
decision that I now think I have some reason to
believe is the right one.   I might profitably
devote an entire separate chapter of this book to
exposing what the exact processes were by which
I reached this decision.   I prefer, however, to
leave this unexplained as a very good exercise
in thinking for you to practice.   Use all the
instruments of thinking, weigh carefully the
various results, and see whether you arrive at the
same conclusion that I did.   If you do this you
will be giving yourself an excellent minor workout
in the art of ordering problems.

I indicated elsewhere that Plato and Aristotle,
and many philosophers before and since, devoted
much time and thought to this question of ordering
problems, and you can do no better than to
start where they did.   They started with the
question, " What is the supreme human good ? "
They understood that in the general ordering of

problems, if you could first fix reasonably well this supreme human good, you would then find it possible and easier to go about the enumerating of the subsidiary goods and their relationships to each other and to the supreme good.

This is the most basic ordering of problems which can be undertaken. In ordinary parlance, it is sometimes termed deciding just what it is you want to get out of life. It should be the controlling plan for even your smallest and most unimportant action. Action for the most part connotes effort. It is senseless to engage in effort except with a purpose. It is senseless to accomplish a smaller purpose at the expense of a larger one. If you know what the supreme human good, that is, the larger purpose, is, you take out the best insurance policy against engaging in any activity which, while accomplishing its immediate purpose, finally precludes your accomplishing another and more important purpose.

We seem to grasp this principle better in the education of a small child than we do in the education of ourselves. It requires no great mental feat on our part to be able to tell a child not to eat too much ice cream or it'll get a stomach-ache. That is, it will accomplish the smaller purpose of glutting its appetite on ice cream while making impossible the accomplishment of a larger purpose, which is avoiding pain—in this instance, a stomach-ache. But when it comes to our own case, as adults, we're not always equally wise. Good reading, for example,

is an effort, and we all know how many adults yield to their natural inclination towards laziness and avoid good reading instead of so ordering their problems as to forgo the, at best, lesser good of indolence, in order to try to accomplish the certainly greater good of knowledge.   Personally I can't see a great difference between that example and the case of the child and the ice cream.

I trust that I have completely persuaded you of the rightness and necessity of the first general rule of good thinking : that is, establishing a priority of problems.   Let me give you a few simple suggestions on how to do this.   Decide intuitively, or however best you can, what the really important things are to you in your life.   Remember that the average life span to day is about sixty-five and that you may live to be eighty or more. Don't make too limited a judgment on what you want out of life.   The things which are likely to be uppermost in your mind are the things you want during the next ten or fifteen years.   This is the wrong way to approach the problem.   Try instead to decide what it is you want throughout the entire duration of your life.   If you set up a proper list, the prime factors will be very few in number.   As a matter of fact, only two prime objectives are possible.   One is happiness and the other is satisfying the dictates of conscience. The first belongs to the philosophical, the second to the religious frame of reference.   I am going to confine myself to the first factor, happiness.   It should not be too hard for you to determine what different kinds of happiness you want to make up

your total sum. Part of your list will probably have to do with the human relationships of marriage, of children, and of friends. Part of it may have to do with matters of material gain, like the acquisition of money or property. Part of it may have to do with the aesthetic satisfaction arising from the proper exercise of the physical and mental powers that you may possess.

I have suggested to you, here, a very simple and limited set of categories, but I think you see what I mean. When you have set up some of these fundamental objectives of your life and have established some of their relationships to each other, you will discover certain conflicts between them. If, for instance, you want both money and honor (that is, the respect of your contemporaries) there is a possible conflict. If you acquire the money by stealing, you risk the loss of honor. If you do not steal, you may be one of the large number of people who find themselves unable to acquire money. I am not in the least interested for the purpose of this discussion, in the moral issues at stake. This is an essay in thinking, not in ethics, and I simply point out to you as a logical result that, in the ordering of problems, leaving out all questions of conscience, you may make a rational choice between money without honor and honor without money. I cannot refrain from pointing out that, on logical grounds alone, you had better plunk for the latter.

It is really quite interesting how, consistently, right conclusions in different fields tend to

duplicate each other.   The philosopher believes, in the hierarchy of problems, that moral virtues are better than intellectual virtues.   The logician can reach the same conclusion, though possibly by a different route.   Psychologists talk about people being well and poorly integrated, and consider it a basic factor of mental health.   The essential characteristic of an individual who is, in the terms of the psychologist, "well integrated" is a reasonable success in the establishment of the individual's priority of problems, and, I would generally say, presupposes some sort of recognition of the primary importance of moral virtues.

Intelligent people, of course, are constantly rearranging parts of their hierarchy of problems. Increasing wisdom, changing desire, and changing environment are three influences perpetually at work and perpetually dictating the need for some change in the ordering of problems.

There are, then, three things to be done about the establishment of the priority.   First, if you don't have a plan, make one at once.   Second, test its validity with every instrument and skill of thinking you possess.   Third, expect to change it constantly until you die.   I suppose I might properly add, fourth—use it.

Let us progress from the general problem of *problems,* from which we have evolved our first general rule of priority, to the problem of *a problem.*   We will picture you as being faced with one particular, concrete problem.   What are the general rules by which you should be guided in

trying to solve it ? Is there a priority of rules to be established, comparable to the priority of problems that we set up as an indispensable requisite in Rule 1 ? We will take these questions in order.

The second general rule for better thinking is : state your problem. No artistic thinking about a problem is possible unless you follow Rule 2. It is possible to solve problems without stating them at all, let alone stating them correctly, but the process will not be one of artistic thinking. " What do I care," I can hear you say, " so long as I get the right answer ? " So I hasten to remind you that, as Aristotle said, " One swallow does not make a summer," and one lucky, haphazard right answer does not make right thinking. You have to become a thoroughgoing Greek in your attitude toward this. You have to believe that the way of doing things in thinking—that is, good form—is not an academic foible or an idle whimsey, but the path to intellectual virtue.

I walked into a meeting yesterday where a group of executives were discussing one of the time-honored problems of operation in a large store : how can the salespeople be brought to sell more than they do ? The immediate point being debated was whether, in paying salesclerks commissions on sales, the store should use one uniform system throughout, or should have several different systems. Having come into the middle of a debate, I sat down and listened for a few minutes and then asked that the problem be stated.

They stated it as I have indicated, one uniform system versus several different systems.

Up to that time, the problem had not been specifically stated. Conversation, as so often happens, had run a rapid course from one point to another and had, only by chance, settled down to the particular point that the executives were discussing. When they stopped the debate and stated the problem, certain things immediately became apparent. This is the virtue of stating problems instead of arguing vaguely. The act of stating a problem practically forces you to do certain useful things about the problem. The first thing it's likely to make you do is to ask yourself whether the problem, in the form stated, has any significance whatsoever. This particular problem, when stated in the above terms, had practically no significance. It was like asking: should a person prefer brook trout or tennis? There is no intrinsic advantage in a store's having either a uniform or a varied system of incentive payments to salesclerks. Whichever way they had decided this particular question, no real advantage could have accrued to the store. They would simply have succeeded in recording a majority prejudice either for or against uniformity of payment. You will note that until the problem was stated it wasn't possible to demonstrate the fact that the problem under discussion had no significance.

I happened to know that the general topic of the discussion was better selling, so after these executives had stated the immediate problem of

uniform methods of incentive, I asked them if they didn't think they would make quicker progress by asking themselves the more general question of what relationship might exist between all methods of salesclerk compensation and the objective of better selling. This was by way of establishing a sort of subpriority of problems. We went on to develop the theme and established a fairly complete priority. It ran something like this : better selling involves a number of variable factors, such as methods of display, physical arrangement of articles to be sold, and so forth. The particular problem under consideration, however, had to do with assuming all variables, other than salespeople, as being fixed, and then taking the salespeople as one entire problem. This was subdivided into the picking of salespeople as a separate subproblem. Here is the diagram they finally set up to indicate the priority of problems in connection with this question of better selling.

BETTER SELLING

Picking the best involves possible salespeople ; then,

I	II	III
Stating t h e objective: maximum gross volume per clerk	Providing adequate incentives to insure maximum desire of this objective by salespeople	Providing most favorable conditions for the salespeople achieving the objective

This process in improved efficiency to conform to the general requirements of store policy of

   I.   Maximum customer good will
   II.   Maximum employee welfare
   III.   Reasonable safeguarding of store profit

Each of the main questions spotted in the diagram was expanded into a series of subquestions. Thus, under picking of best possible salespeople, subquestions were tabulated having to do with the kind of qualities, experience, motivation, special skills, *et cetera,* which should be looked for, and their relative importance. Under the question of incentives, questions of money incentives were thrown into one group, security into another, promotional possibilities and recognition of individual achievement into still another. Finally a reasonably complete hicrarchy of problems was articulated, and useful solutions were not slow in coming. All of this was initially made possible by insisting that the problem be stated.

I said that by stating a problem you are almost forced to the useful consideration of several points about the problem, and that one of these points is, " Does the problem have any significance in the form stated ? " There are other things that you should ask about a problem once it's been stated. You should certainly ask, " Is the problem worth solving ? " This is an essential test to be made. In deciding whether a problem is worth solving, you have really, strictly speaking, an investment problem on your hands. Every solution of a problem entails the investment of time, effort, and possibly other things, such as money. If an equal investment of these tangible and intangible assets could result in the solving of some other problem whose solution would yield greater benefits, then you may assume, Q.E.D., that the problem in hand is not currently worth solving.

Take the case of a high-school teacher, who has heard somewhere that the factor of lighting in the classroom is an important one. Her common sense tells her that the lighting in her own classroom is perfectly adequate, but she thinks maybe she'd better have it measured anyway. She calls in a lighting engineer who tells her that the lighting is indeed adequate, but that he knows a way whereby it could, at small expense, be slightly improved. The teacher goes to the principal of the school to study with him, at some length, whether the improvement should or should not be made.

Now all this is sheer waste and poppycock. Even if the fractional improvement were made, it wouldn't do enough good to think about. If the teacher had had bird sense, she would have been spending the same time and effort either trying to help a pupil or trying to make a better teacher out of herself. To me it is depressing to consider how many people spend so much effort solving problems which are indeed problems; problems which will produce some slight benefits by their solution; but still, problems which are so vitally unimportant in the total range of problems that there is just no excuse for ever tackling them.

The third general rule for better thinking is: separate, as far as possible, all emotional influences from all rational processes, in the effort to obtain correct solutions. You can't think with your stomach. Lots of people have tried it, and the

results are pitiable. Stomach thinking is that very human and apparently universal weakness : trying to get answers to problems by a careful consultation of one's assorted likes, dislikes, hopes, fears, prejudices, and fetishes. Observe carefully here a vital distinction. I did not say, "Eliminate emotional factors from your final conclusion." I said, " Separate them from the rational processes, and determine intellectually how much weight is to be given to each of these two forces in the reaching of your final conclusion."

The fourth general rule for better thinking is : state your situation with regard to data. There is a certain amount of relevant data necessary to the solution of every problem. You must ask yourself how much of those relevant data you already possess ; how much more are readily available, either in books, records, the minds of other people, or in some other form ; how much more, though not readily available, are still obtainable ; and how much seem, by all feasible processes, to be practically unobtainable. In connection with data, you must ask yourself not only how much relevant data you either have or can obtain, but also how dependable and accurate these data are, and whether they are in a usable form. These are all items to safeguard you in your thinking against the faults of being either uninformed or misinformed. They also have a connection with the question of whether a problem is worth tackling, since we alluded earlier to the need for considering investment of time in relation to possible increment. The obtaining of necessary

and accurate data represents part of the total time to be invested in the solution of the problem.

The fifth .general rule for better thinking is: observe a fixed sequence of basic acts in the handling of problems. The sequence is as follows:

After stating the problem and acquiring the data to be used:

1—Execute the appropriate and required processes of solution (as discussed in the next chapter, " Special Rules for the Choice and Use of the Instruments ").

2—State the tentative solution or solutions.

3—Choose one single tentative solution.

4—Make all available theoretic test checks of the validity of the solution.

5—Relate the solution to your planned priority of problems.

6—Make any necessary alteration in the solution indicated by relating it to your total plan.

7—Set up, where possible, measurements of the exactness of your solution.

8—Set up, where possible, advance measurements such that, when your solution is actually put to the final pragmatic test of action, you can properly determine how successfully it worked.

I think the meaning of this sequence will become self-explanatory as you try using it. I think the use of it will save you a lot of time as well as producing certain other benefits for you.

Sixth general rule for better *thinking :* estimate, as well as you can, the loss-gain factor in *probable* solutions, and plan in advance the course of action if the solution is unsuccessful. This rule calls for some explanation, although I would say that every professional gambler will readily understand what I am talking about.

Supposing we discuss it in terms of gambling. You walk into the Monte Carlo casino with fifty dollars in your pocket. You decide you would like to play roulette. The first thing you should do, in estimating the loss-gain probability, is to acquaint yourself with the fact that there are 37 numbers on the wheel, any one of which you may bet on, but if your number comes up, you get paid only 36 to 1. This means that if you bet a dollar on a number 37 times in succession, and the rules of probability are perfectly fulfilled, you will be out exactly one dollar. Accordingly, all you have to do is repeat this performance a sufficient number of times and you can be out as many dollars as you wish. On the other hand, in one evening's gambling of two or three hours, the laws of probability are rarely perfectly fulfilled, so that you might, if you are unlucky, lose considerably more than the exact house odds and you might, if you are reasonably lucky, actually win.

If you have just fifty dollars in your pocket, it might be quite desirable for you to estimate these chances properly in advance and to decide, since you will probably be a loser, how much

of a loss you are prepared to sustain in order to purchase whatever pleasure you may derive from an evening's gambling. It is just like buying a theater ticket. Is the evening's pleasure worth five dollars, ten dollars, or fifty dollars to you ?

Let us complicate the situation a little. The fifty dollars you have in your pocket are the last fifty dollars you have in the world. If you didn't gamble at all, you could send a cable home for more money and still have enough left to keep body and soul together until the extra funds were transmitted that would enable you to buy your passage home. If, on the other hand, you had one hundred dollars you could buy your own way home without having to resort to a wired appeal for help. If, in these circumstances, you walk into the gambling room determined either to make your hundred dollars or lose everything you have, you have failed to comply with the second part of the above rule. You have not provided yourself with a satisfactory course of action in case your venture goes against you and you end up with, instead of a hundred dollars, nothing.

There is one final suggestion I should like to make in this chapter, which I still do not feel justified in dignifying to the position of a general rule for better thinking. It contains, nevertheless, a useful maxim. A certain number of problems are brought, after proper study, to the point of a correct solution. The solution is

then put into execution, and the execution
proves to be a failure. People are then all too
prone to say that the solution must have been
wrong. Now, this isn't necessarily true at all.
As a matter of fact, the reverse is frequently the
case. The danger I am warning you against is
a peculiar example of the fallacy of *non sequitur*.
The reasoning would be : we were given the
solution of a problem ; we used the solution ; it
didn't work ; therefore, the solution must have
been wrong. The fact is that as often as not,
it wasn't the fault of the solution, it was the
execution that was wrong, or faulty, or improper.
If, in such circumstances, you make the mistake
of attributing a failure to the solution itself
rather than to the faulty execution, you will
probably proceed to the utterly wasteful activity
of posing yourself the problem all over again
and trying to find yourself another solution,
which will necessarily be the incorrect one.

I think I should close this chapter with a
quite pertinent quotation from Aristotle : " It
is possible to fail in many ways (for evil belongs
to the class of the unlimited, as the Pythagoreans
conjectured, and good to that of the limited)
while to succeed is possible only in one way (for
which reason, also, one is easy and the other
difficult, to miss the mark easy, to hit it difficult)
. . . for men are good in but one way, but bad
in many."

Special Rules for the Choice and Use of the Instruments

IN THIS CHAPTER, we are to consider a situation in which we assume three factors, two fixed and one variable. The two fixed factors are, first, the statement of the problem and, second, the data from which a solution may be obtained. The variable has to do with the choice of instruments for the arrangement of the data into patterns, and with the artistic use of these instruments.

Now then, given a problem to be solved, a reasonable amount of relevant data, and no further possibility of obtaining any additional information about the problem, what's the first instrument you use ? The answer is intuition. There is a curious quirk involved in this. The first use to make of your intuition in tackling a problem is for the primary choice of instruments by which the problem is to be solved.

Problems are solved in one of two ways: either exclusively by the use of intuition or by the use of intuition in combination with one or more of the five listed instruments of conscious reasoning. Some problems should never have anything more than intuition applied to them. Some problems should, after the original intuitive choice of instruments, be tackled largely through

one or more of the five conscious instruments themselves, and some should be solved by the use of all of the instruments, with particular attention to the parenthetic seventh contained in your check list of instruments of thinking.

Take the primary choice, intuition alone vs. intuition plus other instruments. If you are faced with a problem which is in the nature of an emergency, so that there is scarcely time to pursue a careful and laborious process of conscious reasoning, don't fiddle around—solve it by intuition. Again, if you are faced with a problem where the consequences of your decision will not be grave, don't fiddle—solve it with intuition. Yet once more, if the larger proportion of relevant data needed for a scientific solution of the problem are not available—solve it with intuition.

Consider now the converse to these rules. If the amount of relevant data available to a problem are extensive, if the consequences of your decision are grave, and if you have time to use reasoning processes, *never* solve a problem simply by the use of intuition. There are two other occasions on which you should use conscious processes of reasoning even though the consequences of your decision may be trivial. One of these is when you wish for educational purposes to teach someone else how you reached your decision. The other is when you expect someone else to execute your decision, and an intelligent understanding of the basis for the decision is necessary to an intelligent execution.

If you decide to solve a problem exclusively by intuition, I can think of no really worth-while directions to give you as to the manner of using your intuition to achieve the result. Some people say that silent prayer is efficacious; others aver that these decisions should be made, as far as possible, just after the full of the moon, and with a white rabbit's foot tied round the neck. I think in this I had best leave you to your own devices. I can tell you to reflect purposefully, and give as free rein as you know how to the unchecked processes of your sub-conscious. But still, the precise method by which the individual effectively sets this machinery in motion is a subtle and individual affair—and you must learn for yourself how best, having decided to solve a problem intuitively, you can, as I said, get the wheels to turning.

I have elsewhere proposed certain steps I think you can take, but over a considerable period of time, to encourage the free and fruitful exercise of your intuitive faculties, and to lay in as rich and fertile and varied an experience as may be on which to exercise those faculties. Most of what pointers I shall offer you in this chapter on the choice and use of the instruments of thinking will, therefore, be concerned with the five instruments of conscious reasoning.

If you decide that the problem facing you is to be solved by a joint use of intuition with the conscious processes of reasoning. I suggest that your first step be to bring up to your conscious

level of thinking all of the relevant material which readily occurs to you as being pertinent to the problem. In the case of an extremely simple problem, this may take no more than a few minutes. In a more complex matter, hours or even days can properly be devoted to this process.

The next step is to take the problem as stated and place it within its related hierarchy of problems. Give it a miniature frame of reference. So far you have applied Rules 1 and 2 from the last chapter. Now you must think of the choice of instruments.

Your first choice should be Number 3, semantics. This is a test check of one sort on the adequacy of the statement of your problem. Words stand for things. They are not the things they stand for, but only symbols of them. Being only symbols, they omit and distort at least some of the characteristics for which they stand. You must first be aware, in the words used to state the problem, what the omissions and distortions are, so that you may judge well whether the residual meaning of the words is adequate to their use in the statement of the problem.

Consider a problem like this: should the United States help the Allies in their present war against Germany? I have heard people spend hours arguing this problem, only to end up by saying it was a matter of how you defined the word *help*. They had started off, one side with the belief that the United States should not help,

if it meant sending soldiers, and the other side, with the belief that it should help, if it meant lending money and supplies. One side advanced a long list of arguments that the United States should help : because the principles of democracy were at issue, because the United States had selfish and material ends to gain, and so on. The other side advanced the standard reasons having to do with isolationism, America staying out of European affairs, America having enough troubles at home to occupy all its attention ; the statement that the Allies would not help America if the situation were reversed, and the rest of the list. This kind of an argument, arising out of a purely semantic difficulty, is a thoroughly commonplace occurrence. A couple of minutes' attention to the words used in stating the problem can generally reduce to a minimum these semantic difficulties and eliminate such inartistic debates.

When semantic difficulties, however, involve deeply rooted emotional bias, their elimination is sometimes more difficult. Supposing the problem were : is it true that every right-thinking and able-bodied man will go to the defense of his country in time of war ? The question obviously hinges around the word *right-thinking,* and you have no doubt found, as I have, that a large number of persons hold this statement to be such a self-evident and inviolable truth that a dispassionate and rational appraisal of it is repugnant to them. Their antipathy to all analyses of the validity of the statement generally

extend even to the apparently innocuous process of examining the semantics of the statement. If you say to a person who has asserted the truth of this proposition, " What do you mean, ' right-thinking ' ? " he is not unlikely to answer you, with some anger, " You know what ' righ-thinking ' is just as well as I do—why quibble ? "

The deeper the emotional bias that you discover to be associated with a semantic difficulty in any word, the more essential it will be to establish the true connection of the word with reality before attempting to proceed with any analysis.   Some of these emotional sets to words or groups of words become so serious in particular individuals as to be the source of definite mental derangement. When I say " derangement," I don't mean mere personal eccentricity, I mean madness.   There are some striking examples on record of the cure of definitely insane people through a removal of their semantic difficulties.   That's fairly impressive, if you stop to think about it.   The line dividing sanity from insanity is not the broad and comfortable band that we would like to have it, but rather resembles the narrowest of hair lines. We don't usually call a person mad because he holds one wrong opinion based on a semantic difficulty ; but, if a man goes out and kills another man because, in his terminology, the other man has " wronged" him, we might, in certain circumstances, hold the opinion that the man must have been temporarily mad when he committed the murder.

Don't misunderstand me. I am not implying that all such murders are solely attributable to semantic difficulties. I am saying that in some instances they are, and I am using this rather drastic example to suggest that wrongly held opinions are always dangerous and sometimes lead to tragic results. If the wrong opinions are based on simple semantic difficulties, they are inexcusable, because the correction of them is easily available to everyone who will go to the comparatively small trouble of acquainting himself with the general nature of semantics.

We will assume that we have examined the statement of a problem and that one of two things has happened. Either the statement appeared to contain no dangerous semantic difficulties or, if it did, we have restated it so as to eliminate the difficulties. We are now ready to go on to choose one of the remaining four instruments of thinking as a means of arranging the data and achieving a solution. If you are an artist in thinking, the choice will not be a crucial one, because of the fact that, if you have chosen the wrong instrument first, you will readily recognize this before you proceed far with your analysis. For the really artistic thinker, there is an even surer safeguard. I want to show you what I mean by referring to what happens, among skillful players, in a game of bridge.

When a very good bridge player picks up his hand, in order to decide on a bid, a very intricate process takes place in his mind. I am not

concerned here with the part of his thinking that has to do with the state of the score or his opinion of the relative abilities and peculiarities of the other players at the table.   What I have in mind is that, as far as possible, and guided by probability, the player who is about to bid places the distribution of the cards in the hands of the other players.   He then says to himself, " If I make the bid I have in mind, assuming the probable distribution of cards, what will be the play of the hand ? "   If there are two or three possible bids in the hand, the expert player will mentally play out each of the three in order to see which one plays the best, and that one will be the bid he will make.

Something very similar to this is what goes on in the mind of the artist in thinking when making the choice of instruments for the solution of a particular problem.   He rapidly runs through at least the early part of each of the four processes that would be used and judges from this which of the four is most likely to yield success.   This is a fairly advanced form of thinking and until we are quite sure that we have become sufficiently expert to perform it well, we had better make use of some rules of thumb, to give us the best possible chance of picking the right instruments first.

¶If your objective is an incontestable solution of the problem, which will stand up under rigorous cross-examination and will amount virtually to scientific proof self-contained in the answer, your

first choice should be formal logic. We will
consider a little later the further question of
whether under formal logic you should select
the verbal or the mathematical method of pro-
cedure. If, on the other hand, all you require
for a satisfactory solution is a moderately high
degree of credibility in your answer, then you
may properly choose to begin with voluntarist
logic or the continuum.

Take first the problem where you require a
positive, and not simply a probable, solution.
You might suppose that your instinct would tell
you accurately whether the problem was one to
be solved by logic or mathematics. This is not so.
Your instinct, if it is average, would tell you to
use mathematics to help you answer questions
of " how much " and " how many " and kindred
quantitative questions, leaving the " which "
and the " what " of the qualitative category of
questions to be answered by ordinary logic. It
will, therefore, be useful for you to note that
practically all of symbolic logic and a certain
respectable and usable portion of ordinary ma-
thematics have to do with processes constructed
for the solution of qualitative, not quantitative
problems. All this becomes readily apparent in
a problem of this sort :

You inherit a manufacturing plant which is
equipped for the making of down-filled comfort-
ables. You find that the business has not been
doing very well, and you ask the intelligent ques-
tion : " What other kind of comfortables can be

made in this plant ? "   You learn that the plant is
capable of making also both wool-filled and
cotton filled comfortables, but you find that there
are special reasons why the cotton-filled should
not be of any interest to you.   You then pose
yourself the problem, " What kind of comfortables
should I manufacture in my plant, down-filled or
wool-filled ? "   Now the proper way to get the
answer to your problem is to conduct a statistical
study which will elicit the information that many
hundred times as many wool-filled as down-filled
comfortables are sold.   You therefore say to
yourself, " I will have wool-filled comfortables
made in my factory."   The point to be noted is
that, in addition to the ordinary use of logical
processes necessary to the solution of practically
every problem, you have made valuable use of the
statistical or mathematical process to help resolve
your difficulty.   I might point out one other item
to be noted about this example, which is that the
statement of the problem perhaps involved a
false dilemma, since your ultimate correct decision
might well be to manufacture both wool-filled
and down-filled comfortables in the proportions
wanted by the public.

If you have an average education in mathe-
matics, one useful enlargement of your mathema-
tical understanding that you can very easily
undertake is to obtain any ordinary textbook on
standard methods of statistics.   Even a super-
ficial study of such a book will help you to
solve many additional problems well within your
own present range of mathematics, provided

those mathematics are guided into the proper statistical channels.

Let us imagine now that you are attempting a problem still calling for a positive rather than a probable solution, but not susceptible of solution by mathematics. You are, therefore, reduced to the use of formal logic. How should you proceed ? If you are confining yourself to strictly syllogistic reasoning, there is one important thing you should do beyond the usual observance of the rules of syllogism. That is to exercise extreme care in scrutinizing the validity of your first proposition in each of the syllogisms on which you base your chain of reasoning.

Take the case of the employer who has a formal demand served upon him by a labor union to sign a contract with it for a certain number of his employees. Assume that the employer is one of that tribe of unswerving and inveterate union enemies, an ardent would-be union buster. This union buster, if his reasons were reduced to syllogisms, would argue something like this : " All unions are my natural enemies. The organization which has presented a demand is a union. Therefore this organization is my natural enemy." His next syllogism might run something like this. " The only course to pursue with natural enemies is to fight them. This union is my natural enemy, therefore I will fight it." His third syllogism might run : " If you get in a fight, use every weapon you've got. I am in a fight. Therefore, I will use every weapon I've got." Well, you know

where this kind of reasoning is apt to lead to —some pretty ill-considered, strong-headed, and —sometimes—deeply regretted action. Yet, if you examine the three individual syllogisms that I have proposed, none of them contain any fallacies, either formal or material. They conform to all the rules of the syllogism. The trouble with them, if there is a trouble, is that their first proposition is in each case wrong.

You must never for an instant forget in the use of syllogisms that you are using the " if then " form of reasoning. *If* your original proposition is sound *and* you observe the rules of the syllogism, *then* your conclusion will be sound. But you must not accept the soundness of your first proposition without challenging it and submitting it to every test of which you are capable. Submitting your first proposition to test involves stating a new problem. Thus, in the first of the three syllogisms that I've just quoted, the employer should have asked himself, " Is it true that all unions are the natural enemies of the employer ? " He must then attempt to construct a syllogistic proof of this statement. If he is unable to do this, he must at least attempt to find probable grounds on which to support his proposition. In the absence of either of these grounds he must abandon the proposition unless he is prepared, deliberately and consciously, to hold the proposition on emotional rather than rational grounds. Finally, if he is prepared to act on a nonrational proposition, he must likewise be prepared to suffer the possible consequences of such a choice.

Since thinking is full of dangers, I should point out to you here the danger of the procedure that I am recommending to you. It is called, by the logicians, " infinite regress." Supposing the employer follows our instructions and tries to provide grounds for his assertion that unions are the natural enemies of employers. Suppose he actually constructs a syllogism to prove it ? The syllogism will run : " If, something or other, then unions are the natural enemies of employers." If we were arguing with this man, we might say to him, " Your syllogism is perfectly good, but now you must construct a new syllogism to prove the soundness of your first proposition having to do with ' if something or other.' " This can be kept up indefinitely, so that a process of reasoning, instead of pursuing its proper course forward, goes infinitely backward by dint of successively challenging the grounds of the first proposition in each new syllogism. Careful reasoning, combined with intuition, will materially assist you in determining the point at which you believe it sensible in the analysis of any stated problem to halt this regressive process and assume some proposition as true or axiomatic.

Supposing, instead of using the syllogism to reach your conclusion, you decide to employ mediate inference, through use of analogy. You are proposing to reach a conclusion by saying that Idea A is sufficiently like Idea B for the two ideas to be called alike. You say to a friend, " You know Jones is a criminal, even though he's not in jail. He's exactly like Al Capone. The

only difference is that Jones never got caught."
You could be challenged on various parts of this
assertion, but the one I am suggesting you be
particularly wary of is the one which represents
the inherent weakness of all analogy ; that is,
that the similarities on which are based an assertion
of general similarity are not always the significant
or the controlling factors. Your man Jones may
be a shyster lawyer, who is wily enough never
actually to transgress any law and unscrupulous
enough to breach the spirit of the law while still
observing the letter. If this is so, your analogy
is a faulty one, because the distinguishing charac-
teristic which caused society to brand Capone
a criminal was not that he was immoral but that
he broke the law. I carefully chose the Capone
example because the analogy to Jones is suffi-
ciently glib to be typical of the class of convincing
faulty analogies. Capone was a recognized cri-
minal long before he was convicted, and he was
convicted on a charge (income-tax fraud) al-
together different from the notorious infamies
which first brought him in the public eyes as a
crook. The technical distinction is that Capone's
main misdemeanors were illegal but the evidence
for conviction was not available, whereas Jones'
malpractice, while unethical, was not legally ac-
tionable even if all the evidence were to be pro-
duced. The defects in plausible but defective
analogies almost always lie similarly well conceal-
ed beneath the surface, and demand the closest
scrutiny for their detection. It is particularly
desirable for you to exercise caution about this

danger in analogy, since analogy is such a common and widespread method of reaching conclusions.

I said earlier that in some ways the most fertile and productive of the three subdivisions of thinking used by the Greeks was induction. I have so far spared you all technicalities having to do with inductive reasoning. There are one or two general ideas about induction that I now think I owe it to you to mention. If you are trying to reach a general conclusion by the examination of a number of particular cases, you must pay some attention to the number and kind of cases on which you have based the conclusion. The number of the cases must satisfy the needs of a statistical cross section, which might range anywhere from a fraction of one per cent in certain kinds of problems way up to ten or even fifteen per cent in others.

If, for instance, you want to make a general assertion, without recourse to government statistics, about how many people in this country own more than a million dollars in their own right, you will have to get a very large statistical cross section of cases of the people in this country in order for the basis of your assertion to be valid. If, on the other hand, you want to know how many people in this country have blue eyes, a very small statistical cross section would be a satisfactory basis for an assertion. We may take it, therefore, that one of the handy rules about valid inductive conclusions is that,

usually, the rarer the phenomenon about which
the generalization is being made the larger the
number of cases which should be examined as
grounds for the conclusion, and vice versa.
This has to do with a cross section being suffi-
ciently large, purely from a statistical standpoint,
to be dependable. Supposing, however, that
what you want to know is the percentage of
children in the country having rickets. Rickets
is a disease caused primarily by malnutrition
and lack of sunlight. The percentage will vary
widely in different parts of the country, according
to the presence or absence of these causes. If
you found in studying a certain city in the country
that the percentage was fairly high, you might
then reason that a low number of cases taken
around the rest of the country would provide
you with a statistically satisfactory cross section,
since you were tabulating the incidence of a
common rather than a rare phenomenon. You
would be wrong in this, not from a statistical, or
formal, reason, but from a material reason, in
that in certain parts of the country the disease
is, in fact, a rare phenomenon and you would
therefore need a much higher number of cases
than you first thought necessary in order to
have a sound basis for a general assertion. Pro-
vided proper syllogistic reasoning is followed,
the main dangers of erroneous induction arise
either from the examination of an insufficient
number of cases, which we have just been dis-
cussing, or from inadequate observation and
analysis of the cases used.

Let us, with tongue slightly in cheek, dissect an imperfect induction of Shakespeare's *Julius Caesar*—imperfect because it shows inadequate observation and analysis of the cases used. You remember when Cæsar says to Antony:

> *Let me have men about me, that are fat,*
> *Sleek-headed men, and such as sleepe a-nights :*
> *Yond Cassius has a leane and hungry looke,*
> *He thinks too much : such men are dangerous.*

This was superb rhetoric but somewhat less than good logic. We can scarcely doubt that Caesar must have known some thin men who were not dangerous—maybe even some thin men who did not think too much. Yet still he says, "....such men are dangerous." Caesar's belief was based on the fact that the instances stuck in his memory of thin men who lied, stole, or cheated him; whereas, apparently the rest of his skinnier acquaintances simply made no impression on him whatsoever.

I am not going to burden you with any other comments about the use of analogy, deduction, and induction because of my abiding belief in the ability of the human mind to provide its own rules and guides for the use of these different instruments, if only a few starting clues are given to set the thinking off in the right direction. Throughout this book it is my aim to write, not as much as is pertinent on each of these topics, but as little as would just accomplish the start of a new process.

Your problem may be one, we have said, where a probable rather than a positive solution will be acceptable. A probable solution might not ordinarily be your first choice, but in a great preponderance of problems encountered in daily living and daily thinking, positive solutions are so unavailable that only a probable solution is at all within reach—and even that is often difficult.

I should say that in all cases where you are in search of merely a probable solution, voluntarist logic should be your first choice of an instrument. The main change involved in your use of voluntarism rather than formal logic will be that instead of constructing a series of arguments which say, " *If—then, necessarily,*" you will follow the usual procedures of syllogism but modifying your basic pattern to read, " *If—then, probably,*" Let me give you a couple of samples of how this would change your reasoning processes. A syllogism which would be utterly unacceptable in formal logic because it involves the fallacy of *non sequitur* might be quite acceptable to you if you were looking for just a probable conclusion. Such a one would be : as I was walking up the street the other day, I saw a man go up to a fire box and pull the lever which set off the alarm, so I knew that there must be a fire in the neighborhood. Strictly speaking, this is a *non sequitur*, because it does not absolutely and necessarily follow that if a man sets off a fire alarm, there is a fire in the neighborhood. He might have thought he had seen a fire and made a mistake, or someone might have told him there was a fire, as a practical

joke. Since you, however, are not interested in an absolutely positive conclusion, you are perfectly justified in your belief that probably there was a fire in the neighborhood. You have indulged in a syllogism not acceptable in formal logic but perfectly useful for ordinary living.

Supposing you say, "Smith drives his car much too fast and is bound to have a smashup." I hadn't intended a pun, but what you have committed in formal logic is the fallacy of accident. Fast driving is not, within limits, the cause of accidents. Bad driving is the cause; and if a man drives fast, but well, he may drive for forty years without an accident. Nevertheless, there is a sufficiently high correlation between fast driving and accident to make your conclusion, which was only a probable one, perfectly satisfactory in terms of voluntarist logic, even though it failed to fulfil the rigid conditions of formal logic.

The choice of the continuum is fairly well indicated in probable reasoning under those conditions where the solution is to be not a simple, probable one, but a probability bearing an approximate and not an accurate relationship to some other relevant factor. For instance : is courage a characteristic quality of Airedales ? This would be a silly proposition to try to prove by formal logic since you can't prove absolutely whether it is or is not the characteristic of this breed. I am not even sure that it would be

very revealing if you used a process of voluntarist logic and said that the answer was probably yes. A more informative way of answering the question would be to say that courage is a continuum between the two poles of complete absence of fear at the one end and completely paralyzing fear, making conflicting action impossible, at the other end. If you wanted to use mathematical symbolism, and designate absence of fear as 100% and paralyzing fear as 0%, in the measuring of courage, you might fill in the continuum with examples of varying degrees of courage among dogs, and end up with the statement that, whereas Irish setters represented say a mid-point on the continuum, or 50%, Airedales were at the approximate point of 85%, as contrasted with English bull terriers, which might be placed approximately at 95%. Instead of giving an exact solution to the problem, you would have given a relatively inexact but reasonably informative solution and you would have done this in the case of a problem in which any solution which purported to be exact would actually be erroneous.

We have completed the list, and I have provided you, not with exhaustive rules for the choice and use of the instruments of thinking, but with a set of what I hope will prove to be provocative and helpful clues. You might have been more pleased with a neat set of rules, although I hope not. There is something satisfactory about having complicated and confusing objects tied up in a neat, orderly, small bundle, and

delivered to you. But I imagine that you're almost as suspicious as I am of this kind of patent medicine. Really hard things, like good thinking, can't be learned that way and shouldn't be taught that way. It is much better to face honestly the inherent difficulty of the art, and try to get some useful bits of help here and there, than it is to make the easy but foolish mistake of oversimplification and overregimentation. And, with this majestic cliché, which still remains a truth, I think we may properly close the chapter.

PART III

++

THE END
OF THINKING

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Application of Thinking to Administrative Problems

THE LATIN WORD from which our word *art* is derived and the Greek word from which our word *poetry* is derived have a common meaning. Both the Latin and the Greek words signify making or doing. *Art* is making and doing. The art of thinking is, then, the doing of thinking—the application of good thinking to actual problems. When we talk about the end of thinking that is what we mean. The end or purpose of thinking is to solve actual problems.

I plan in this third part of the book to show you the application of thinking to a range of practical business problems. In the last chapter I propose to indicate some application of thinking to other than business problems. It seemed to me, however, that if most of my examples were drawn from one field such as business, the demonstration might be both more useful and less confusing to the reader than if I attempted to supply random demonstrations from many fields.

In considering thinking as applied to business, I am going to start with the problems of the general administrative executive. In succeeding chapters we shall have occasion to discuss certain problems facing the specialist working in

the fields of publicity, operation, merchandis-
ing, and control.

It would be well to begin with a few definitions.
I take it that an executive in business is an
individual in whom is vested some official autho-
rity. An operating executive is a person who is
supposed to supervise, at first hand, and in some
sense practically to do himself, the task which is
to be accomplished. A buyer in a department
store, a district sales manager in a manufacturing
company, a foreman in a factory—these are
examples of operating executives. They are men
in whom a certain amount of authority is vested
and who are, at the same time, held responsible
at firsthand for the accomplishment of jobs. No
intervening level of authority is interposed
between them and the direct supervision of the
work to be done. While they cannot, with their
own two hands, do all of the work, they can
continuously and on the spot, with their own
two eyes, oversee the doing of all the work,
and therefore take complete and detailed res-
ponsibility for the manner of the execution. It
is important to understand that the difference
between these operating executives and an
administrative executive is a difference not in
degree, but in kind. The work of the adminis-
trative executive is a different kind of work.

An administrative executive, instead of being
able either to do the work in question or at
firsthand to oversee with his own eyes practically
every detail of the work, is forced to work almost

entirely through other people. In large organ-izations, having several levels of executives, the administrative executive may have to work through people, who work through people, who work through still other people. We shall examine later, in detail, the implications arising out of the difference in kind of these two executive functions. At the present time I am concerned chiefly with the fact that the distinction exists and is an important one.

The administrative executive so defined has three functions. These functions have to do with operation, with policy, and with personnel. I referred in another place to the duplication of principle which exists between apparently unrelated fields. It might interest you to know here that operation, policy, and personnel are the liberal arts of the administrative executive in strictly the same sense as grammar, logic, and rhetoric are the liberal arts in the classical field.

Operation, or the grammar of the adminis-trative executive, should occupy a sharply limited portion of the administrative executive's total time and effort. I am going to try to define that limitation for you. An administrative executive should give just exactly enough time to operation in his business to accomplish three things.

Since he has the final responsibility for the proper conduct of the business under his ad-ministration, he should, in the first place, give just enough of his time and attention to the

operating phase of his business to make sure
that it is being properly conducted. This means
simply to make sure that the necessary functions
are being performed ; that they are being ade-
quately performed; and that the results are
commensurate with proper expectation. In a
word, he must know that things in general are
going right and that nothing serious is going
wrong.

He should, next, give enough time to operation
to make sure that his activities with regard to
policy and personnel are realistic. Unless a
man is tolerably close to the daily realities in
and around his business—the facts and the figures
that make up the picture—his personnel and
policy efforts, detached from these realities, are
liable to be irrelevant and futile.

Lastly, this executive should spend time on
operation just sufficient to contribute whatever
to the operation he is uniquely talented, over all
members of the organization, to contribute. If,
in addition to being the publicity director of a
certain company, I am by far the most talented
copywriter in the company, it would be foolish
for me not to write personally those relatively
few pieces of copy a year the handling of which
have an especially important influence in the total
company's welfare.

Now observe. In defining the amount of time
to be spent by the administrative executive on
operation, I have, in each instance, stated that
just enough time should be spent to accomplish

certain specific objectives. The inference is, *and no more*. I suppose I might equally say " and no less ", but it's my experience that executives, being practical and conscientious souls, like to feel that they are earning their salary by " getting" things done." A good many of them have a feeling that " getting things done " means doing things with their own two hands. They entertain, too, more than a faint suspicion that thinking is not *doing things*, and they experience in that connection a sense of guilt, which you may sometimes have heard expressed by an executive in these terms : " I didn't get a thing done all day. I was tied up in a series of meetings." Well, I suppose if no thinking went on in the meetings he was right—he didn't get a thing done.

To digress for a moment, I know one business which took strong steps to try to curb footloose meetings. The company was perfectly willing to have as many meetings as were necessary to the proper conduct of the business, only it had an unusually firm desire that these meetings should be fruitful. To this end, four signs were prominently hung on the walls of the board room of the company. The signs were worded as follows :

> No meeting to be held without a predetermined plan as to what points are to be covered at the meeting and the order in which they are to be covered. The first part of the agenda should always contain those items which *must* be covered by the meeting ; the second part should contain those items which will be covered if time is sufficient, but which can be put over until the next scheduled meeting.

A predetermined time limit should then be set for all meetings and adhered to.

Meetings should not be used as a place to collect data or conduct studies which could better be done by one or two individuals before they come to the meeting. Meetings should be confined to a discussion of previously collected and properly presented data, and the business of the meeting is to discuss these data and reach a conclusion. This presupposes that the members of the meeting have done the necessary preparatory study on the subject before coming to the meeting.

Those attending meetings should confine their discussion to important considerations relative to the topics on the program, and should not take up the time of the meeting with wordy digressions or with unnecessarily long discussions which are relevant but not very important.

A certain number of meetings are held not for the purpose of making a decision but for the purpose of sharing the responsibility of a decision which has been made. This sharing of responsibility is permissible on important policy questions, but on operating matters and policy matters of minor importance executives should be willing to exercise the authority vested in their position; to assume the responsibility for their decisions and to act with courage on their convictions, even though a subsequent group discussion may necessitate some change in the course they have decided on.

While these signs did not eliminate all deadwood from the company meetings, they did, I am told, help. Their use was simple but effective. Any time any member of a meeting believed that another member was transgressing the rules all that he did was silently to point at the wall in the direction of the framed rule that he believed was being violated. Apparently human nature did the rest.

To return to the matter of the amount of time to be spent by the administrative executive on operation, the problem that I have been describing is sometimes referred to as the problem of executive delegation. It is said that a man cannot be a good executive unless he can delegate. I suppose that's true, but it has always seemed to me to be a generalization of unusually limited usefulness. The question is really not so much whether to delegate as it is what, when, how much, and to whom. Executive delegation has sundry uses. The one I am particularly interested in for the present analysis is that executive delegation frees a certain amount of time for the executive who delegates. As I have indicated, the purpose of freeing that time is to make it available for the true and all-important executive functions of policy and personnel.

Consider first the less important of these two— policy. The real nature of policy is well obscured in business, and the word itself is very loosely used. I know of at least three meanings in which it is commonly employed in every business. It is used to mean intent ; that is, the intent of the top management of the business. It is used just as often to denote, not original intent, but merely a rule ; a presumably iron-clad decree for the regulation of the conduct of the employees. Finally, it is often used to signify the common practice or habit of the business. I make this difference because I am sure you can think of a certain number of company rules which never

get translated into habit, as well as a certain number of habits never formally promulgated as rules.

I should say that the third interpretation of policy, that is, the activity of habit, is primarily the responsibility of the operating executive. Rules, depending on their importance and generality, may be the responsibility of either the operating or the administrative executive, but intent is the sole concern of the administrative executive, and it was this prime definition of policy that I had in mind in saying that policy and personnel are proper concerns of the administrative executive. Only top management is in a position to define and redefine the intents of a company. This can be well done only as a result of good thinking ; and time taken from operating to perform well this function is money in the pocket of any company.

We come next to personnel. The personnel problem, as I understand it, can be usefully divided into three parts : the picking of people, the placing of people after they have been picked, and the guidance of people after they have been both picked and placed. These are large questions. They are questions facing not only business organizations but all co-operative enterprises employing large numbers of people to accomplish their purpose. High degrees of specialization and functionalization of the work to be done tend to increase still further the importance and the complexity of the personnel

problem. Still, one thing remains clear. If the president of a university, the head of a company, or the general of an army is able to perform really well the three stated parts of the personnel function, he need do nothing else to be a superb administrative head. Put it more strongly. The head of an enterprise can be totally uninstructed in all the details of his enterprise and totally unversed in all the skills of his enterprise, and still be a good head, provided only he performs well these three things. That's a most extreme statement of the case, but I think not too extreme, and it does not make the point that I am after.

Good thinking applied to these personnel problems should result in some significant articulation of the principles involved—what the Harvard Business School is wont to call " currently useful generalizations." Let us take the first problem, that of picking people. In order to keep it within manageable compass, suppose we further limit the problem to the picking of executive material. Before I proceed with this demonstration, I want to ask you to lay down this book, and see whether you can, concisely and lucidly, explain the relatively few principles which should govern the process of selecting executive material from the available applicants. Since this is an exercise in demonstration, an attempt to demonstrate the application of what I trust is good thinking to a particular business problem, I want you to try yourself out at the problem before I give you what I conceive to be the answer.

If you have formulated your own answer, I am ready to give you mine, and then we can compare our results. My answer starts with a recognition of the fact that all executive place-ment represents compromise. The mythical, perfect person to fill a job is never found. Even the very best of placements involve some defects in the individual being placed. As long as there are no perfect people in the world, perfect place-ment will remain the process of placing imperfect people skillfully.

Bearing in mind the inevitability of compromise in placement, take a hypothetical case. You're an executive in a certain company and you wish to find an individual who can be your general assistant. How do you proceed ?

Your first step should be a careful job analysis— a detailed listing of the duties of the position. Next you must make another careful listing, this time of the *minimum* qualities necessary in any individual to an adequate performance of the duties of the position as you have outlined it in your job analysis. Now, and only now, are you ready to start the picking process ; that is, the interviewing of the leading applicants with a view to making a final choice. I do not propose here to discuss how you have obtained your leading applicants. That is another question. I shall assume that you have six applicants to interview, and that it is your problem to determine as actually and factually as may be which of these applicants has, in the fullest measure, the

predetermined qualities that you have set up
as prerequisites for the position.

I ask you now to look at the chart on pages
160 and 161 and to read the ensuing comment
with close reference to the chart.   You will notice,
on the left-hand side of the chart, a graduated
scale running from 0 to 100.   Across the middle
of the chart runs a heavy line, marked *Normal.*
This line is supposed to denote the theoretical
average endowment of all individuals with regard
to any qualities that you may be rating.   Let me
explain.

If you were able to rate a million individuals
in the quality of courage, there would be a theore-
tically average endowment of courage.   People
who were thought to possess more than this
amount would be said to be above average, people
who had less, below average.   Whatever the
qualities that you may decide you want to rate
in the individuals you are considering, this line
drawn at 50% will still be considered to represent
this theoretical average for each of the individuals
under consideration.   Here 50% is used purely
for convenience.   To be mathematically correct,
the true average would have to be placed some-
what higher, since it is apparent that no
ordinary being possesses literally zero in any
quality.   If I were striving to be mathematically
precise, I might set the range from 20% to 95%
and place the average at around 57 or 58.
Instead, I place the line at 50 for two reasons.
Optically the middle point is a conventional and

EXECUTIVE APP

RAISAL CHART

PROPER REALM OF COMPROMISE

↑ ↑ ↑

+VALUES +VALUES +VALUES

EXPERIENCE ADAPTABILITY SPECIAL SKILLS

NORMAL

BUSINESS | TO PEOPLE | MERCHANDISE SELECTION

NON BUSINESS | TO SITUATIONS | STATISTICS

PUBLICITY

ETC. (A LARGE NUMBER OF OTHER VARIED SPECIAL SKILLS)

REALM OF COMPROMISE | REALM OF COMPROMISE | REALM OF COMPROMISE

↓ ↓ ↓
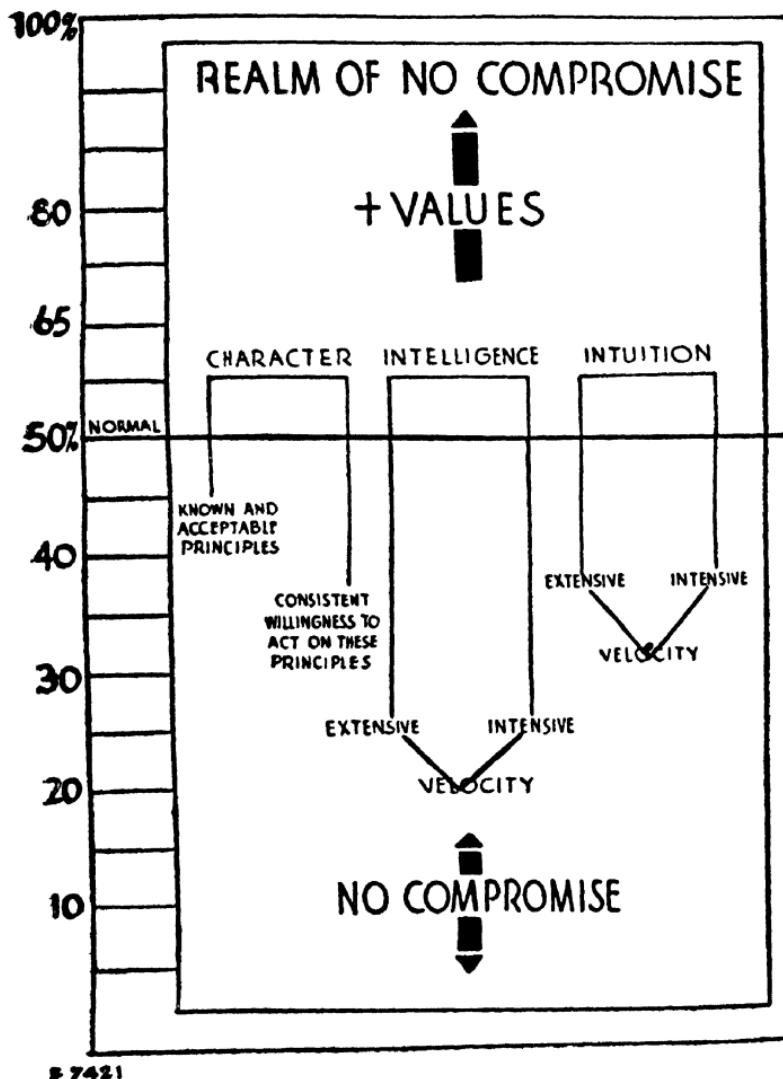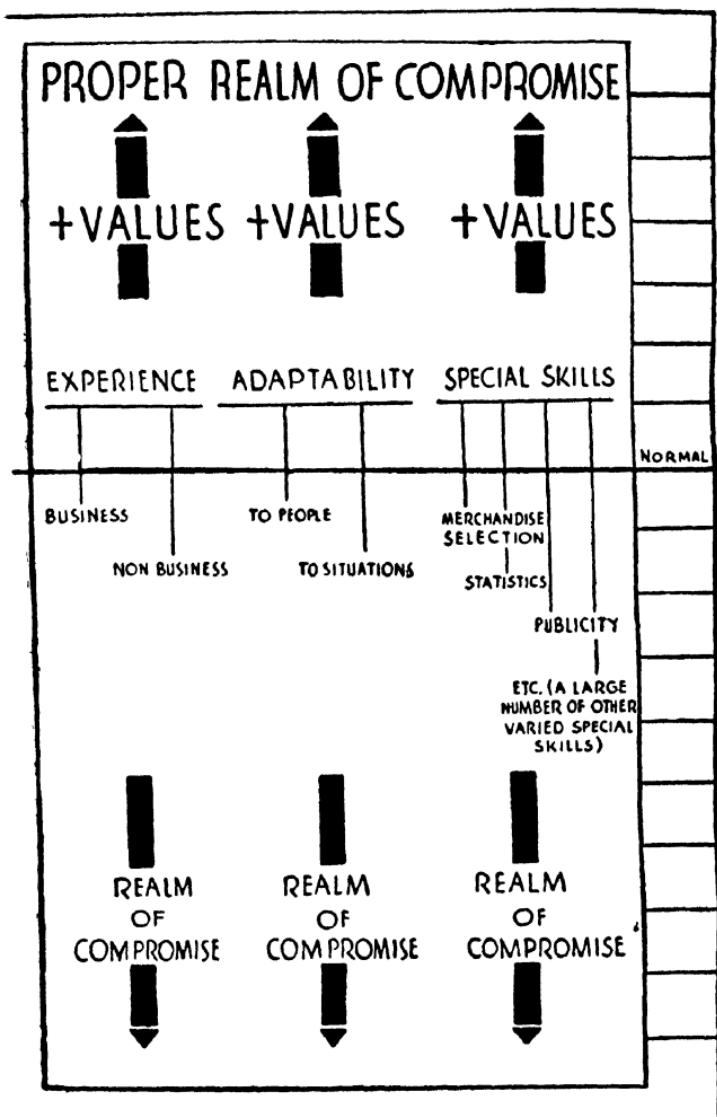
understandable location for an average. The other
reason is that it furnishes me with an occasion
to point out that this is not, in any sense, a precise
mathematical process. Any concept of precise
mathematical notation for the true indication
of the degree to which a person possesses a quality
is sheer nonsense. A mathematical scale can
only be useful if you think of it as being a rough
approximation and nothing more.

Even before deciding what qualities we are
going to rate in the individual applicants, we can
make up our minds on one point. Whatever
qualities we may be rating, the unambitious dead
level of mediocrity represented by the average
line drawn at 50% should be an unsatisfactory
point of departure. For the initial point of
departure, and before you are in possession of
pertinent facts to guide your judgment, it would
be reasonable for you to expect somewhat above
the average endowment in all of the qualities
on which you plan to rate your prospect. You
will find, therefore, on the chart, six short, hori-
zontal lines drawn at the level of 65%. Again
I remind you that this is not an exact computa-
tion : 65% is merely supposed to indicate a
position   substantially   higher   than   the   50%
denoting average.

Now we're ready to talk of the qualities on
which we are going to rate the individual. The
chart, as you can see, names six qualities : charac-
ter, intelligence, intuition, experience, adaptability,
and   special   skills.   These   qualities   are,   of

necessity, arbitrarily selected and arbitrarily named. For them to become usable, you must at least understand what it is they are intended to signify. Each of them is subdivided on the chart into two parts, which are by way of being a definition of the labels. *Character* is defined first as being known and acceptable principles in the individual. This means that at some point in the interview, you must make known to yourself what the individual's principles are, and you must decide whether these are principles that are acceptable to you. You have undoubtedly known some persons who, while possessed of impeccably high principles, were, unfortunately, not able always to live up to them. We therefore complete our definition of character by stipulating not only that the person must have acceptable principles, but that he must have demonstrated consistent willingness and ability to live up to them.

We take next on the chart two qualities measuring mental power. Ordinarily I find it necessary in explaining this chart to set forth carefully and clearly the distinction between intelligence and intuition. With your reading of the earlier part of the book, this distinction will be perfectly clear to you if I simply substitute the words *articulated and conscious reasoning processes* for the word *intelligence* on the chart. *Intuition*, of course, refers to the unarticulated and subconscious processes. The chart divides both of these qualities into extensive and intensive. *Intensive* is considered to designate the power

which permits an individual to think a considerable distance along one particular, restricted path. *Extensive*, on the other hand, indicates the power of thinking at least some useful distance along many paths. The chart further provides a common denominator—velocity—for both these mental qualities. This is because there are some minds which are able to think well, consciously, and subconsciously, intensively and extensively, and still are so slow in their reaching of a final conclusion that too often by the time the final conclusion has been obtained the occasion has passed for which the solution of the problem was sought. In the applied art of business, the factor of speed in thinking must be measured.

The next factor, that of *experience*, is split into business experience and nonbusiness experience. Nonbusiness experience is thought to be all of the background, environment, and experience making up the individual's sum total of experience, minus only his strictly vocational or business experience.

Adaptability is defined as being of two sorts : adaptability to people and adaptability to situations.

The sixth of the factors, *special skills*, is a sort of portmanteau or carryall and is intended to include as long a list of specialized talents or flairs as you may choose to rate. It contemplates such skills, for instance, as a flair for publicity, a flair for statistics, a flair for styling,

a flair for the orderly and neat arrangement of work, and so forth.

One of the important characteristics of this chart is that it is divided into two halves. The left-hand half contains the first three qualities and is marked *Realm of No Compromise*. The right-hand half, where the second three qualities are to be found, is entitled *Proper Realm of Compromise*. In the left-hand half you will see arrows pointing upward to a plus sign, indicating the possibility of plus values in each of the three qualities, but no arrows pointing downward, since no compromise is permissible below the line at the level of 65%. In the right-hand half, on the other hand, the arrows point upward to the plus values and downward to zero, since this half has been designated as the compromise realm. You remember that we started this consideration of the problem of picking people by saying that all picking was, by its very nature, a compromise process. You cannot make an intelligent compromise unless you are specifically and acutely aware of the kind of compromise being made. This chart is designed to ensure your awareness on this point.

Supposing I describe to you what I have found to be, all too often, the course of an interview and the method of deciding the choice of executive applicants, and then contrast with that the course and method as they would take place with the use of this chart. Without the chart, what frequently happens is this :

The executive sends for the six applicants and interviews them individually. He devotes, if he's a reasonably conscientious executive, from five to maybe twenty minutes to each interview. Eight tenths of the interview is likely to be devoted to a detailed history of the applicant's business experience. The other two tenths is usually spent in trying to find out how much the applicant possesses of the particular special skill that the executive considers important to the job being filled. If the executive doing the interviewing is unusually " personnel-minded," he may divert one tenth from business experience to nonbusiness experience. He may even, if he is extremely careful, divert another tenth from the subject of special skill in order to find out something about adaptability.

Bear in mind, now, that there are twelve things to be rated on this chart, that many business interviews make no attempt to rate anything except two of the twelve, and that many more good interviews extend the number only to four. You can see how a proper original understanding of the factors on the chart would tend to govern and enrich the course of the interview.

I suppose I should here explicitly state that no interview is any good if it becomes wooden or is obviously regimented. Any interviewer of just ordinary skill should be able to elicit information on all twelve points on the chart by dint of a perfectly informal conversation, leaving

the applicant in no way feeling that he is answering a questionnaire instead of having a chat.

If the interviewer has attempted to rate only from two to four of the twelve qualities, his analysis is glaringly incomplete and nothing further need be said to condemn his method. Suppose, however, that he is an extraordinary interviewer who actually has had in mind all twelve of the points that the chart says are pertinent to an executive rating. If he does not use the chart, what does he do ? He indulges in a set of mental gymnastics so difficult that the ordinary brain is totally incapable of coming out of the gymnastics with any adequate answer. Just think what he's trying to do. He is trying to attach a separate mathematical rating to each of twelve qualities ; then to give each of the twelve its own separate and peculiar weighting ; and then to come out of this entire computation with an answer which will be the correct arithmetical averaging of all of these figures. We noted earlier that if you were asked to divide 645,792 by 3472, you would probably do better by long division than you would by consulting your subconscious. This is the same case again. It is doubtful whether many human minds are capable of coming out of this problem with the right answer by intuition. It is certain that there is no profit in doing it when by the use of a simple chart you can engage in a process, comparable to long division in arithmetic, which will automatically and easily provide you with the type of answer you seek.

So much for the method of using the chart. Now let us challenge some of the assumptions. By what reasoning do I include these particular six qualities and exclude all others ? I include these six quali- ties because they're the simplest classification. I know of those prime factors which measure wanting, thinking, and doing, and those prime factors are the things we want to know about in measuring an individual. I define them in the particular way they are defined because this arrangement was the most practical compromise I could find between the observance of good classical rules of classification, on the one hand, and moderate intelligibility by the people who were to use the chart, on the other hand. The chart is, like all analyses, incomplete. It doesn't, for example, attempt to measure the factor of health. Most business interviews tend to take reasonable account of the health factor and if you're worried in your own interviewing about neglecting this factor, you can always add it to the chart. " What," you may say, " of the quality of leadership ? " My answer to this is that leadership is not a quality at all, it is a complicated construct of qualities, and I presume that no more basic error can be made in the methodology of rating individuals than to treat leadership as an individual quality and attempt to rate it as such. Leadership is the effect of which the six qualities I have named are multiple causes, and incidentally they are not a complete list of the causes of leadership. I think that if you study the chart sympathetically, seeking

understanding rather than fault, you will be able to answer satisfactorily most of the questions you may have about distortion, overlapping, or omissions. At any rate, I hope so.

There is, nevertheless, one other fundamental assumption in the chart that I want you to challenge so that I may answer you. The question you are to ask is, "By what right do you arbitrarily assign the three left-hand qualities to the realm of no compromise, and the three right-hand qualities to the compromise field?" I'll tell you. I have spent much time carefully reviewing in my mind the literally hundreds of executive placements that I have observed at firsthand, plus the thousands more which I have known something about. In all this review I have been unable to recall one single example of a compromise on any one of the no-compromise qualities, where the placement could in my judgment be said to have been even remotely satisfactory. I have, on the other hand, known some dozens of successful placements where the compromise was confined to the proper realm of compromise involved in the three right-hand qualities. Let me cite three dramatic examples, using fictitious names :

Mr. X, a man of about forty, had for many years been a successful administrative executive in a nonbusiness field. He decided he wished to transfer his activities to business and became the officer of a very large corporation. He was an individual who represented a compromise in

the factor of business experience all the way down to zero. He had enormous plus values on the left-hand side of the chart. He was immediately and has since been continuously an outstanding success in the business world. The compromise in his case was down to zero but it was in the proper realm of compromise, and the placement was successful.

My second example, Mr. Y, was again a man of outstanding character and mental power. He was, when I first knew him, the most impossible human being to get along with or work with that I think I've ever seen holding a responsible position in business. I am afraid that even at that I have understated the case. He was incredible. Impossible as he was to get along with, he did an extraordinary job. What's more, he had enough intelligence and intuition to recognize, over a period of time, how seriously and needlessly he was handicapping himself by his inability to get on with people. He had the character to correct his deficiencies, and today he is the successful president of an important company and not only liked but loved by his subordinates. He represents a case of successful placement, because although in the matter of adaptability to people he represented a temporary compromise closely approaching zero, the sacrifice made in this respect was more than adequately offset by his immense plus values on the left-hand side of the chart.

Mr. Z was an equally interesting study. Mr. Z was an executive in merchandising. If there is one special skill which is normally considered indispensable in the merchandising executive it is what is called a feeling for merchandise—some sensitivity to the eye appeal, the line, color, and design which make one object beautiful and another one ugly. Mr. Z not only was immune to this reaction but he continually entertained his admiring colleagues by explaining and illustrating how complete his anesthesia was. I cannot imagine a more complete compromise in a significant special skill. Mr. Z also is today the successful president of a large corporation, and he also represents a successful placement and a proper compromise. These examples sound to me, even as I write them, fictitious. I have been sorely tempted to quote to you the names of these men. They are names you would recognize. Only a last lingering sense of the fitness of things has deterred me ; but I can assure you that they are actual cases, dramatic in themselves and even more dramatic if it were permissible for me to satisfy your curiosity and name names.

I first devised this executive-appraisal chart largely as a matter of self-defense. At a time when I was interviewing a great many applicants for a wide variety of executive positions, it was forcibly borne in upon me that my method of reaching decisions in these matters was inexcusably inadequate. Furthermore, I was engaged in a series of selections where I simply could not

afford to be wrong very often. The need created
the device and the use justified it. After I
had used it satisfactorily a while for myself, I
distributed it to the top executives of my company
with a covering note which ran as follows:

I have been asked to send you the
attached chart, which I have found
helpful in clarifying my own
appraisal of prospective candidates
for executive placement. I have
considered sending out with this
chart a definition of the terms used,
together with a detailed explanation
of the underlying theory involved
and the various types of application.
I have decided against such explana-
tion for two reasons: first, because
I believe much of it is self-evident,
and secondly, because I am afraid
it would involve too long a write-up
to be readily usable.

I should like, however, to emphasize
three important things about this
chart:
  1.   That it is designed to forecast
       future performance on limited
       data, and is not a substitute
       for the historical method
       represented by the executive
       personnel review card, although
       in the case of individuals
       within the organization being

considered for a promotion, it may well be used as supplementary to the card.

2. That it is a method of appraisal of applicants, not a substitute for appraisal.

3. That it is just one more mechanical device offered in the hope that it may be useful to some people, but it is not proposed either as an indispensable or as the only useful device for executive appraisal.

Since that time we have had occasion to distribute this chart by request to a good many other companies, and I have been asked to explain the use of it to a good many miscellaneous groups. It seems so far to have stood the test of time moderately well. No one has disproved any of its assumptions and a good many have told me that it helped them to think better about the problem of selection of executives. Accordingly, I am encouraged to believe that it does represent an adequate application of thinking to a particular segment of a business problem.

We have said that the personnel problem is the crucial one for the administrative executive and that the picking of people is the first part of the problem. The second part is the proper placing of people. If you have a hundred executive positions in your company you may pick

a hundred people well to fill those positions and still distribute them so ineptly as to largely defeat the success attendant upon your first step of picking. This involves two questions on which a large body of literature has been perpetrated —one is the problem of the organization chart, the other is the problem of the so-called human equation. These are interesting problems and ones that should be well understood by the competent administrative executive ; but I cannot here take the space to examine them.

We come then to the third phase of the personnel problem. If you, as a top executive, have picked people well and have fitted them well into your organization, what is there that still remains to be done ? You must guide, inspire, and develop them in such a way that in the shortest possible period of time they may realize to the fullest extent on their abilities to contribute in the positions they occupy. What is the process whereby this may be done ? It is a problem, strictly speaking, in adult education. If it were so recognized and so labeled throughout business, it might be better done. If it were so labeled, business executives might be led to compare the processes of adult education in use in their companies with any educational processes in use anywhere. The comparison would not be reassuring.

Critical as I am of some of the educational processes in vogue in our present institutions of higher learning, I must admit that they are

vastly superior to the parallel processes per-
formed in the world of business. The commonest
process of adult education used in the business
world might be described as the process of osmosis
—the valiant theory that the potential executive
can absorb business education through his bones.
The most popular practice, if a business indulges,
in any executive training process whatsoever,
is to try to put a good younger man in the posi-
tion of assistant to a successful older man. It is
then thought, I gather, that granted an exposure
to the older and successful man's daily habits
of business, the younger man will, by the afore-
said mysterious osmotic processes, absorb enough
of his superior's techniques so as to be able
eventually to go out on his own and do likewise.
From the standpoint of education that's a pretty
sad theory. One of my principal purposes in
writing this book was to try to supply a form of
remedy for this state of affairs. Business exe-
cutives can learn better thinking and, having
learned it, at least a fair proportion of them can
teach it—but not by osmosis.

I had in mind also to analyze the problem of
the priority of problems for the administrative
executive. I suspect, however, that this is a
problem less susceptible to useful generalization
than the personnel problem just analyzed. I
content myself, then, with pointing out to you
that between the personnel problem and the
one of priority of problems, you have before you
the two fundamental questions which constitute
the major intellectual challenge of executive

administration. I find this, too, a convenient place to emphasize two other truths that I hold to be self-evident. The first is that in greater or less degree these two questions of handling of people and ordering of problems are of major importance to every individual in or out of business, and so worthy of the most careful study. The second truth is that as an individual moves up the scale of responsibility in any co-operative enterprise, the demands laid upon him for increasing skill in the processes of conscious reasoning grow steadily and are not easily to be evaded.

Application of Thinking to Publicity and Public Relations

PUBLICITY is proverbially an artistic venture, and a mystery. The creation of the visual part of advertising, having to do with layout and illustration, would certainly appear, at first glance, to justify this opinion. The composition of inspired copy, some lovely concoction of words that impels the reader irresistibly to the course of action suggested by the copywriter, might seem to offer confirmation of the theory. The birth of ideas around which copy and art work are to be built is a third vital process suggesting further corroboration that advertising is an art, not a science. Advertising is an art. This is not to say that as an art it is not susceptible to ordinary processes of analysis and the formulation of certain basic governing principles. The writing of tragic plays is also an art, but that did not deter Aristotle from writing an essay delineating the principles on which the art might be practiced and by which it might be measured. This is an important point and one on which I wish to dilate.

When I first went into business I entered, after an initial period of training, into the field of merchandising. I was informed by various skilled practitioners in the field that merchandising was an art and a mystery. There were,

to be sure, certain workaday things which could be learned about it, but such talents as, for example, a real feeling for merchandise were said to be innate talents. I was told that in the course of time I would discover, or to be more accurate, others would discover for me, whether or not I possessed this innate talent. If I did not possess it, I was not adequately equipped successfully to practice the business of merchandising. I was told too that a certain kind of shrewdness, a realistic sense of values, and particularly of negotiable values, was an indispensable part of the inherent equipment of a successful merchandiser. Even if I possessed the first qualification, it seemed that, lacking the second, I would be doomed to failure. I satisfied myself, from a few years actually spent in merchandising, that these theories were largely and significantly untrue. In a moment I will explain to you both why they were held and why they were untrue.

When I left merchandising I went into the field of operating management and at the time of my transition I received a warning. I was told that the successful practice of the art of management presupposed the possession of certain mysterious and innate talents. To be successful in management, it was stated, one must have a very special talent for dealing with people, for sensing their reactions, and for using this sixth sense in the building of group morale and a co-operative spirit. Management also required an innate ability for the close analysis of the problems of method. It called too for unusual

and innate ability to organize complex work in a simple and orderly fashion. These are not all the mysteries of management as they were represented to me, but I should say a fair sampling. I spent a number of years in management. I found these representations to be largely and significantly untrue.

From management I went to the field of publicity. This was the mystery of mysteries. Merchandising and management might have been described to me, I was informed, as minor mysteries, but they were not to be mentioned in the same breath with the true inner mysteries of publicity. Very few people understood publicity. Those who did were born with this faculty of understanding and all that they acquired in later life was simply a minor elaboration of the talents with which they had been so fortunately endowed at the time of their entrance into the world. Some people could write copy. Some people could do layouts. Some people, by divine dispensation, were the recipients of good publicity ideas. A few rare and superlatively gifted individuals had the triple gift and could do all three. It was like being red-haired, you either were or you weren't ; but there wasn't anything you could do about it. Of all the destructive sets of gibberish that I have ever heard, this particular brand I now know was the incomparable top.

There is no unattainable mystery in my opinion in merchandising, none in management, and none whatsoever in publicity.

I said that I would try to tell you why these opinions were held and how they were untrue. They were held by practitioners in the field, as I can see it, for two perfectly good reasons. The first was that most of the successful practitioners practiced intuitively, never having raised the thinking processes by which they practiced to the verbal level. They were quite truthful in their erroneous report that these things were mysteries. They were indeed mysteries, but only in the sense that even the people practicing them had never explained them to themselves. The distinction obviously is that the mysteries were not inexplicable; they were only unexplained.

The other reason I have come to assign to these pretensions of mystery is, I am afraid, a considerably less charitable one. If you do something well and gain your livelihood thereby, it is a perfectly human trait to maintain the position that how you do it well is a mystery and cannot be explained. If it could be explained, and thereby learned by others, your own market value might sharply decline. Certainly your own ego would suffer. I don't know how universal this second reason is, but I can assure you that I've seen plenty of individual examples where I was quite sure of its operation. I wouldn't be surprised but what you could think of quite a number yourself, if you stopped to consider.

I undertook to indicate to you in what respect these theories seemed to me to be false, and I

took the precaution of saying that they were not entirely false but only largely and significantly so. In an earlier chapter, if you will remember, we noted that intuition was capable of solving certain problems apparently insoluble by logic. Wherever artistic practice in the three fields of merchandising, management, or publicity involves the solution of extralogical problems soluble only by intuition, the theory about mysteries is tenable, to some degree at least. The untenable and destructive part of the theory lies in the exaggeration of the number of these extralogical problems. This kind of hyperbole is called by logicians "extrapolation," and I think I might digress for a minute to explain to you the meaning of this useful term.

One expression of the "if then" form of reasoning, which is the basis for formal logic, is in the form of a graph. Draw a short slanting line on a piece of graph paper. Then ask yourself, "If I extend this line six inches, at what point will it terminate?" By laying a ruler along the line and marking off six additional inches, you can fix the exact point. This is the graphic equivalent of saying in words that if a straight line moving in a given direction is extended on the same plane and in the same direction for an additional six inches, then the point at which it terminates can be fixed. Supposing, however, that the original line, which appears to the casual eye to be a straight one, is actually a small section of the circumference

of a very large circle. In that case, although the line might look straight, we know that actually it is slightly curved and that if the circle is completed, the direction of the line will continuously change until the compass has been boxed. The fallacy of extrapolation is the fallacy of treating the curved line as though it were a straight line and saying that if the line were extended a given distance, it would reach a point which could be determined by laying a straight ruler on the line and extending it in a straight line. This is principally a fallacy in induction and was touched upon earlier in a different way by mentioning the fact that an insufficient number of individual cases could lead to a wrong inductive generalization. A sufficient number of cases would, in the graphic example that I have just been using, permit you to plot enough points on the line so as to enable you to recognize that it was in fact a curved and not a straight line.

In the case of people who pretend mysteries in the field of business, the logical fallacy is again this fallacy of extrapolation. Because of the fact that they have been particularly aware of a few outstanding cases of intuitive solutions of extralogical problems they extrapolate. They assume that all useful solutions in the field must be achieved in the same way. The significant truth is that so far as I can see, quantitatively, most of the important problems in this field are logical and not extralogical, and qualitatively the same thing is true.

I cannot stress too heavily the fundamental importance of this concept. The problems which businessmen struggle with are, in large part, susceptible to one or another of the understandable and learnable forms of analysis which we discussed in Part II of this book. I particularly labor the point in this chapter because this chapter deals with the phase of business in which the fraud has been most persistently and most successfully perpetrated. Please don't misunderstand me. There are honest advertising men who don't pretend a mystery. There are also brilliant advertising men who perform mysteries. All I say is, if you admire the mysteries and admit them and put them to one side, there remains the large body proper of the art of publicity, and this body of problems is soluble by analysis.

When I went into the publicity field, having had no experience whatsoever in it, I was already skeptical about this matter of mysteries. I was convinced, nevertheless, that each field has its own useful and peculiar techniques, and that an understanding of these techniques is necessary to successful operation. I thought I would inquire first about the techniques of advertising from people whom I knew to be successful advertising executives, and I spent some considerable time interrogating these individuals in the hope of finding the techniques I sought. They were very accommodating. Most of them were brilliant conversationalists, but they didn't give me what I wanted. I think this was because they were

unable, not unwilling. Their successes were
intuitive. Each of them told me at some length
the principles that they practiced in advertising,
but the principles were disjointed and made
little real sense. Hence I was forced to conclude
that what they believed they did, as explained
in their so-called principles, and what they
actually did and practiced were two such alto-
gether different things that no help was to be
had from them.

I decided reluctantly that if I was to gain
any understanding of the real principles under-
lying advertising I would have to get it not from
conversation but from books. I collected from
those who were best informed on the subject a
long list of technical books on advertising. For
my sins, I plowed through these dreary tomes :
books on layout, books on copy, books on the
choice of the media, and so on. The books were
infinitely less remunerative than the people.
The people at least had been brilliant and en-
tertaining. The books were musty and pedantic.
When I found that I could obtain the light that
I sought neither from people nor from books,
I chose what seemed to be the obvious third
course of action. " If," I said to myself, " the
most experienced advertisers cannot articulate
their principles of advertising either in conver-
sation or in books, I may as well articulate
my own principles as I go along. I may end
up by being wrong, but at least I'll have the
meagre satisfaction of being wrong on a consistent
basis instead of sinning, as it were, from

hand-to-mouth in the inarticulate way that some of these other people seem to."

So I set forth on what proved to be an exciting adventure. I knew that whatever principles I articulated for my own guidance in the practice of advertising would be new and would be said not to be new. They would be new because, so far as I had been able to find out, no principles worthy of the name had been articulated. They would be said not to be new because if they were right the intuitive practitioners had, on and off, been living by them for a good long time, and so would recognize them as being old stuff.

The first problem I tackled along these lines was that of the appearance of department-store newspaper advertising. I was faced with an emergency problem. It was urgently desirable for me to improve as rapidly as possible the quality of the advertising under my supervision. There were several possible points of attack, but in the priority of problems which I established, I decided that appearance must come first, copy next, choice of media next, and the really fundamental question of what message to transmit I was forced to relegate to last position. Well, the problem was rapidly and materially to improve the appearance of the advertising.

I had to take one prior step before tackling the principles that I wanted to formulate. This step was to surround myself with people who were expert technicians—those who could do the necessary things and who were sufficiently pliable

so that they would be willing to perform their functions according to the principles we were about to formulate, even though such principles might differ from their previous method of doing things.

These people were obtained and as soon as they were, we held our first meeting. I explained to them that I knew nothing about advertising which I hoped would be an advantage; that I had been unable to get help from people or from books; that it looked to me as though we had nothing to lose by formulating our own principles since we couldn't get them from anybody else and that I recommended that we begin at once.

I told them that we were going to start with the problem of the appearance of advertising and that the first question I wanted to explore, in the changing of the appearance of our own advertising, was the question of whether we should choose to create what is called, in advertising circles, a store style. A store style is supposed to be a sufficiently consistent and individual method of handling the appearance of a store's advertising, so that at a glance, and even before the store's name is seen, it is apparent to the casual reader that the advertisement must be the product of that particular store and no other. The disadvantage of a store style might lie in two directions, monotony and inflexibility. The advantage in a store having a style is, first, individuality, for whatever that may be worth, and second, whatever equity may inhere in the

building up of an habitual recognition on the part of the reader of the store's offering. The problem was quite extensively surveyed, and the decision was reached that all stores are better off for having a store style. We came thus automatically to the questions of " what style " and " how to create it."

It seemed wise, at this stage of the proceedings, to construct a list of theoretical requirements to which any store style must conform in order to be acceptable. Accordingly we set about constructing this list. We did this, as you will find, in a thoroughly kindergarten way, and this was exactly as it should be. We were, in fact, constructing a primer. Here is the list as we set it down:

For *any* store style to be an acceptable one, it must meet the following requirements:

1. An acceptable store style must be different, since one of the purposes of having a store style is to set apart the appearance of one store's advertising from that of all the others seen by the store's audience. This first requirement was the obvious and proper point of departure.

2. An acceptable store style must be better. This is a more subtle point, although I know from experience that when it is first uttered, it sounds silly. Quite a number of advertisers have recognized the desirability of being different from their competitors. In their anxiety to achieve this difference, a sizable number have succeeded in being different by virtue of being worse. We were inclined to doubt whether difference was an

advantage so absolute as to justify that kind of solution. Let me give you what I consider to be a fair example of a store which succeeded in being different by virtue of being worse. A few years ago a store which had a laudable desire to be different decided to accomplish this difference by adopting a type face not in use by any other advertiser. They selected for their use a typical typewriter type face. They adopted it and have been using it intermittently ever since. These things are matters of opinion, and it is my opinion they fell into exactly the trap that we decided to avoid. They succeeded in being different by virtue of being worse. The type face used on typewriters is perfectly legible but is, by all the canons of good typography that I know, an ugly, graceless, and altogether unhappy example of type design. I have yet to hear any good typographer point to this type face as having any merit.

Another store which elected to secure part of its visual difference through type face also selected a less objectionable but still rather nondescript adaptation of a type face originally designed by the typographer, Frederic Goudy. This store's error at least had the good fortune to be immortalized by a certain wag, who made the comment that the type face selected by the store in question was "neat but not Goudy."

3.   An acceptable store style must be flexible. The messages advertised by department stores are widely varied. Such stores advertise articles

for men, for women, for children, for the house-
hold. They advertise sales at reduced prices
and lines and assortments at regular prices.
All of these variations call for some variety in
the method of constructing the advertisement.
Unless a store style is sufficiently flexible to
accommodate these variations and to present
each of the different kinds of message in its
appropriate form, it may reach the academic
virtue of individuality, but it will never reach the
practical virtue of producing results. Unfortu-
nately, perhaps, for the more artistic souls in
advertising, it is the final purpose of advertising
to produce results and by that alone it must
ultimately be measured. There is another way
too in which a store style must be flexible.
Stores, as purveyors of merchandise, are purchas-
ing agents for the public. They are supposed
to be sensitive to the changing conditions and
needs of the community that they serve and
unless the face they present to the public shows
from time to time some signs of life and changing
expression, they may well be thought by their
audience to have died. This is not a desirable
opinion for their audience to hold of them. It is
necessary, therefore, that any store style, to be
acceptable, have ingredients subject to such
manipulation that while the essential store
character, which is the equity of the style, is
retained, the detailed treatment may from year
to year be so changed and refreshed as to prove
optically that the store is still alive and can once
in a while change the expression on its face.

4.   An acceptable store style should be vigorous rather than namby-pamby. The point here seems fairly sound. A person comes in to see you to sell you a magazine subscription or a life-insurance policy or a new kind of corn plaster. If that person seems to be in a weakened condition and quite unable to utter with any degree of vigor the words necessary to convey his request, I very much incline to doubt whether you would respond favorably to his solicitation. You might not respond even if he were vigorous. He might be so vigorous as to be offensive. He might have the right amount of vigor but the wrong product, or for any of half a dozen reasons, you might refuse to accede. Vigor alone doesn't insure success. All that I'm indicating is that absence of vigor is more than likely to insure failure.

5.   An acceptable store style should be simple rather than complex. I am not going to expand very much on this point. I might suggest that simple appeals are not always easier to construct, but that more people react in more situations to simple appeals than to complex. Complex appeals tend to set up conflicts. Simple appeals tend to avoid them.

6.   An acceptable store style must be within reason as to expense. It is no trick to spend an utterly extravagant and uneconomic sum of money in the purchase of a superior store style. If you spend the money, you may still not get what you are after. But the trouble is even worse than this. Since advertising is only an

adjunct to the process of retail distribution, if you get superb advertising but break the bank in doing it, the particular company you are serving will surely either stop serving the public or you will stop serving it.

7. An acceptable store style should be teachable to the artists who are going to have to execute the style. It is conceivable that you might devise and adopt a style which met every other theoretical requirement that we have listed but which would be so difficult to learn that for all practical purposes it would be worthless.

8. An acceptable store style should be such that it can be well handled by the machinery that is to produce it. The artists referred to above in Number 7 are, if you like, the human machinery. In Number 8 I am thinking of the physical machinery—the printing presses and the type of paper on which they are to print. Modern, rapid presses and cheap wood-pulp news stock are not equipped to do really fine printing, so that if you are adopting a store style for newspaper advertising it must not have as part of its essence such fine details of printing and reproduction as would be impossible to the machinery to be used.

9. An acceptable store style should be harmonious to the personality of the store which is transmitting the message and to the tastes of the audience which is to receive the message. Sears Roebuck and Cartier would require different styles of advertising properly to reflect their personalities. Similarly, the states of New York

and North Dakota contain audiences of sufficiently differing tastes to dictate quite different forms of advertising if your message is to be truly gaited to the individual peculiarities of these two communities. National advertisers, faced with this problem, are forced to seek the lowest common denominator, that is, the style that will appeal to both New York and North Dakota. Stores operating only in one restricted locality have greater scope for governing the appearance of their messages more nearly according to the local tastes of their audiences.

10. An acceptable store style should be durable. If it is thought that there is a growing equity for a store in the growing recognition of more and more readers of the store's own individual style, then 'this requirement becomes a proper one. All it says is that whatever style be adopted it be such that the store is prepared to use it over a period of years, so as to enjoy this growing equity which was one of the principal incentives for adopting a store style in the first place.

That completes the list we made up of theoretical requirements for a store style. Since this like all analyses, is incomplete, the list is not exhaustive. It is, I think, basic. After we had made sure that we thoroughly understood the implications of these ten requirements, we felt that we were ready for our next step—the construction of a store style. I find in referring back to the notes I made at the time we were working on this problem, the following memorandum :

LIST OF FACTORS WHICH CAN BE
MANIPULATED TO PRODUCE A STORE STYLE

It should be noted that no store is
qualified, or should attempt, to
invent a new art form. The problem
is strictly one of making out of old,
recognized artistic elements a new
synthesis which gains its indi-
viduality for the store simply by
being a consistent combination of
artistic ingredients not regularly
used in that combination by compe-
titive stores. Here is a partial
list of elements which can be mani-
pulated in order to achieve this
effect:

   1. Layout, that is, the proper
      disposition of blacks and
      whites. It seems preferable,
      if layout is used as one of the
      distinctive ingredients, to
      adopt a dynamic rather than a
      static type of layout.

   2. Type of art work. If you make
      a reasonably comprehensive list
      of types of art work: wash
      drawings, photographs, etching
      technique, line-engraving tech-
      nique, Japanese-print technique,
      surrealist technique, woodcuts,
      etc., etc., you will be able to
      choose from these the few which

may meet your requirements. In
the above sample listing I have
intentionally combined generic
types, such as line and wash,
with the particular techniques,
such as engraving, etching, in
order to indicate that an
exhaustive list should contain
both sorts.

3. Type face. This should be
selected last, should conform
both to the objective require-
ments of a good type face, and
to the requirements of har-
monizing with the rest of the
style as selected.

That seemed to state the problem pretty
adequately. We weren't going to invent any-
thing new. We were going to manipulate all
the properties in a sufficiently new way so that
when we got through they would bear our own
distinctive thumbprint. And there weren't so
many properties to be manipulated at that. The
thing looked rather simpler than we had at first
suspected. All we had to bear in mind was that
whatever manipulations we put the elements to,
the final synthesis was going to be measured by
our ten theoretical requirements and had to pass
muster.

Before we started in actually manipulating,
we did one rather useful trick. We laid out all
of the advertising of all of our competitors for

the past few weeks and listed those stylistic devices which all of them had in common. This list proved to be a valuable guide of things not to do. Whether the mannerisms they had in common were good or bad, we knew that if we wanted our style to be different, these were things to be avoided. Then we started to play with the elements. We knew that layout was one. We knew that it was to be dynamic rather than static. We knew that it was to avoid the common characteristics of layouts used by competitors, most of which happened incidentally to be static. There aren't so very many things you can do with layout, and we reached a decision rather quickly on this element.

We then moved on to art techniques. This was a little more difficult, but after a good deal of trying and rejecting we reached a decision on this point too.

The matter of type face was an exceptionally easy one, as you will see in a moment. When we finally set up the store style it had only three ingredients; as we had known in advance, no one of the three was new. It was the simultaneous use of the three which was to give us our own individuality in store style.

The first ingredient was layout. We adopted a layout principle involving the location of a sizable mass somewhere in the advertisement and a long curving sweep of merchandise issuing from the mass and following two sides of the outer boundary of the area being used.

The second ingredient was the choice of art technique. It seemed best to use a mixture of art techniques. We chose three : photography (or simulated photography, such as a wash drawing) for the large mass, line drawing for the sweep of merchandise away from the mass, and a sort of cross-hatch technique typical of steel engravings for a general background for the line drawings of merchandise.

The third ingredient was a cinch, once we had made up·our minds to avoid existing common practices so long as we could be better as well as different. It had long been a tradition in store advertising that the use of italics was to be avoided as you would the plague because of the lesser legibility of the italic type face. It had apparently been either forgotten or not known that the earlier great printers had designed and used, with success, some few beautiful and legible italic faces. Accordingly, we adopted a classic Bodoni italic type face which assured us of the difference we were seeking. I remember well that it was our pious hope at the time that all stores would continue to believe in the superiority of the roman type face so as to permanently insure our own type face being different. Unhappily for us, the belief did not long persist, after we had shown that the italic face could lend grace and distinction to newspaper advertising.

Now we had our store style. It remained to test it, first against our theoretical requirements

and then against the final test of use. It seemed to satisfy the requirements, so we let fly with it.

All this happened some years ago. I think you would be interested to know some of the results. In the first place, the style worked; that is, it produced better results for the store. In the second place, it satisfied, as far as we could ascertain, those intangible criteria of taste which are matters of opinion and expert judgment rather than of measurement. In the first two years after its introduction it was the most widely copied store advertising style in America. It won every national advertising award worth winning in the field of advertising. It received, in other words, considerable professional acclaim. This was due only in part to the soundness of the original formula that it followed. It was due also, of course, to the expert execution of the original group who had constructed it, and understood it, and believed in it. The approbation indicated by the advertising awards was not in itself conclusive proof of anything. Nevertheless, in the absence of fixed measurements, it cannot but be reassuring to receive the critical approval of those expert practitioners in a professional field whose opinions presumably are the most worth having.

It is worth noting that the style as described met in practice every one of the original ten requirements. It was different and better and flexible. It was simple and vigorous and adapted to the needs of artists, machinery, and audience.

It was economical and, finally, it permitted of annual change and refreshment without loss of its original identity.

From my own special point of view, it was one of the most satisfactory problems I ever dealt with. We had taken a complicated process, previously considered to be artistic and not susceptible to analysis, and demonstrated that the proper application of orderly thinking to the problem could be made to yield new and entirely satisfactory solutions.

I want now to examine with you some of the other major aspects of the publicity problem as a whole. I am not trying to write a shorthand book for would-be advertising executives, but I am trying to indicate some of the results of the application of thinking of a special sort to the problems of business. In the other business activities, however, such as administration, management, merchandising, and control, I am going to pick in each field only one or two significant problems to be studied. I thought, therefore, that you might find it instructive to have one field, namely publicity, treated rather more completely, so that you might obtain therefrom a somewhat more structural view of the results of thinking. The easiest and certainly the most concrete evidence I can furnish you in this respect is naturally to be drawn from my own firsthand experience, and so I shall continue to describe what I found during the time I was actually engaged in working in this publicity field.

After we had some grounds for belief that progress had been made in improving the appearance of advertising in the store in question, the next problem to be met seemed to be that of copy. Having just finished a satisfactory experiment in formulating principles for the creation and use of an art style, we were encouraged to adopt a similar approach to the improvement of the store's advertising copy. The advertising staff was by this time somewhat inured to my vagaries in the handling of advertising, and I was somewhat surprised, upon broaching the possibility of a formula for copy style, to be met with a resounding protest from the entire copy staff. In fact, they were shocked. " The writing of copy," said they, " was like the writing of anything else, entirely too personal and individual a venture to be regimented or forced into a mold. The whole flavor, the very salt of good copy, rested in its untrammeled and spontaneous articulation of one person's outlook and one person's reaction to an article or a set of circumstances." I patiently explained that I understood what they were saying and did not agree. I pointed to the experience of the store's art department, which had equally at the outset resisted the super-imposition of a formula, and on the same grounds I reminded them that these same artists, turning out their work now completely under the guidance of a formula, did not, in practice, find that discipline restrictive of their personal originality or in any serious way limiting to their powers of resourceful and, personal

self-expression. The copy writers raised an old cry: "That," they said, "was different. Pictures were pictures and copy was copy, and copy, if it could be written at all by formula [which they doubted] would suffer thereby." I asked them if they knew that most great writers were at one time or another in their careers strictly imitative of other writers. I cited examples: Thomas Chatterton, Max Beerbohm, Virgil, James Joyce; Edward FitzGerald, and a respectable number of others. They said they knew that, which I rather rudely took leave to doubt, but that this was different. I was finally brought to the point where I had to say, "Whether you believe in this method or not, let's give it a fair try. If it doesn't work, you can have the satisfaction of having proved me wrong; but meantime you have to do your best to try to make it work, and to admit honestly to me if it does work." They said they would, and being honest people, they meant it and did what they said.

I want to pause here for a minute to tell you why I described in such detail the initial resistance offered by these intelligent, experienced, and well-intentioned people. Their resistance was an evidence of the almost universal resistance to the intrusion of a new idea. Most human beings are at heart conservatives. They prefer the known to the unknown. Any new idea, being at least temporarily in the limbo of the unknown, is suspect. I have met this typical reaction so often and in so many quarters in the study of business problems that I've acquired a rather

cynical attitude about it.   This attitude expresses itself in a feeling on my part that if I introduce what I believe to be a new idea to a group of business people and it doesn't meet with some substantial resistance, I find myself automatically assuming either that the idea is not new or that it can't be much good.   I don't actually put this forward as a valid generalization because it isn't. Some good new ideas meet with instantaneous and enthusiastic approval.   I do say that if you present a new idea and it meets with no adverse criticism at all, it might be well for you, as a result of this lack of opposition, carefully to challenge yourself at least once more on the value of the idea before giving it your whole-hearted support.

After we had agreed that we would attempt to construct a formula for a copy style, we went through the usual business of laying out a priority of problems.   It was suggested that the first step might be, properly, an effort to define what copy is.   We hadn't done this in the case of the art style, although it might in fact have been well to do so.   But in the second case there appeared to be so much confusion and difference as to the true nature and function of copy that it was obvious that we would not be able to proceed very far without defining it.

We defined copy as the process whereby you attempt, through a skilful manipulation of words, to implant an idea in the minds of a group of people.   Copy, that is, is an attempt to

manipulate words to a special commercial purpose.
When you define copy in this way you start to
get some inkling of why more good copy isn't
written. I suppose that I have known well over
a hundred copy writers. I think I have asked
most of them the question : " How do you
define copy ? " I have never received an answer
approximating the above definition. I think if
they had defined copy to themselves in something
like the above way, it would have occurred to
most of them that it might benefit a professional
copy writer diligently to consult those past ma-
nipulators-of-words-to-a-purpose who have gone
down through the ages as great writers.

True, the great writers of literature may have
manipulated their words to a somewhat different
purpose, but they were all trying to implant
ideas and emotions in the mind of the reader.
I do not consider commercial copy writing to
be a literary activity. I know, however, that
copy writers could improve their skill by a greater
familiarity with the ways of good literature and
the great writers. Yet, of the hundred odd
that I have known, very few of them came even
close to what you would call being well read,
and of these few, even fewer had kept up the
habit after school and college. Two of them,
I remember, astonished me by stating that they
intentionally avoided doing any more reading
than they had to, because, if you like, they were
afraid of losing their own style if they read and
came to know the styles of too many other writers.
Well, I suppose it takes all kinds......

If *How to Read a Book* had been published at that time, and if time had been no particular object, we might profitably have taken a few years out to provide our copy staff with the elementary background requisite to the practice of their trade. Lacking this, we were forced to proceed promptly as best we might. We analyzed and listed the ingredients which could be manipulated to the creation of a style. We considered such factors as length of words, common versus uncommon words, color and flavor of words, rhythm and tempo, deliberate tricks of punctuation, and many others. We had quite a number of meetings—long, earnest, difficult bits of skull practice, but the solution was not forthcoming. I think I succeeded in irritating everybody by saying that I had practically done the job for them by outlining the problem, indicating all the lines of approach, suggesting the methods, and indeed doing everything but actually filling in all the details. I went so far as to tell them that, with the information at their disposal, any literate and intelligent person ought to be able to solve the problem in a month. Many months dragged on—and still no solution.

During this period we acquired a new copy chief, a gentleman of considerable erudition, and having himself an unusually nice ear for the overtones of words and a quite uncommon flair in the use of them. We explained carefully to him too the terms of the problem and the lines along which a solution might be expected to lie. He

started to wrestle with it. He wrestled manfully for about eight months. He and I became thoroughly disheartened. The rest of the copy staff had become so long before. Finally the copy chief had a brain storm. One day at home he typed off a masterly eight-page solution of the problem. The solution met every theoretical requirement, was instantly adopted, and has been in use ever since. Certain of the copy writers experienced a real difficulty, at the very beginning, in following the formula. Within a reasonable period, however, they all became adept. Several of them have since told me that with their subsequent understanding and expert use of the formula they acquired the feeling, for the first time in their lives, that they were writing copy professionally and knowing what they were doing. It was a source of considerable satisfaction to them.

Here are two brief excerpts from the essay in which the copy chief solved the problem. The first one, which states the problem, is headed: " What are the elements which make up a style ? "

" Essentially," it says, " a style is the reflection of a writer's personality. It is the reflection of his outlook on life. The more clearly he can transmit this outlook through his writing, the more specific and distinct will be his style. This is based, to be sure, on the premise, one, that a point of view exists and, two, that the writer has the skill to transmit it. These two necessary

elements are not always present. From observation, it would appear difficult to develop a store style answering this description from the average copy writer. Even if it were possible, the problem would then be to blend the various styles into a simple, unified, and consistent style which would be typical of all the copy appearing in our advertising."

Now I give you the second excerpt, which is not the solution, but was the introductory paragraph setting the scene for the solution: "The style which I propose may now be read in most of the newspapers throughout the country. It is written chiefly by columnists. Perhaps its most outstanding characteristic is its eager identification with the public. Perhaps its second most outstanding characteristic is its lack of all affectation. The language is almost bare, yet marked by great distinction. It serves to chronicle not only a visit from a king and queen, but also a church supper. It differs from all advertising copy by refusing to resort to special tricks of language, by avoiding completely exaggeration and superlatives, by eschewing overemphasis on humor. It is a style which stands out because of its extreme humanity and the flavor which it acquires through the use of a simple, yet adult vocabulary. It seems to me that this style should appeal to our customers, since it belongs to the typical American. It is brisk, optimistic, active, comradely. It is a sublimated form of gossip. Among its important virtues are its qualities of intimacy and friendliness. It is idiomatic. It

is, in the nonacademic sense, philosophical. This last point is worth elaboration since it represents the essence of the entire style."

I can't resist quoting one more paragraph, for it contains in eight lines the nub of the solution. Here it is:

"Why can't it become the badge of distinction for a department store to have the public talk about the *warm simplicity* of its advertising, just as the public has reacted to the lucidity of Walter Lippmann? In a day when virtually all media of publicity—the press, the radio, and the motion picture—are fighting with each other to shout the loudest, making the latest claims and bombarding the public with increasing violence (and increasing absurdities) it would appear that a quite personal, yet vigorous and colorful style, such as that of_____, would prove to be a long-sought relief and, by its very contrast, evoke admiration and respect."

I am not going to give you the name of the columnist whose style we decided to adopt as a model. That is by way of being a minor trade secret. I am going to give you the name of the man who discovered the solution and wrote the explanation from which the above quotations are lifted. His name is Robert Strunsky. He is a writer, and the son of a writer. His writing shows it. His teaching of writing, which is the real test of the copy chief, also shows it. That's why the copy produced under his direction

can be written according to a formula and still be well and originally written.

I want to be sure that you understand the full significance of this solution to the copy problem. Like all of these things, it is not the only solution, but it is one of the good ones. It has the virtue of complete novelty. So far as I know, and I am subject to correction on this, no department store's advertising copy has ever previously been written consistently, day in and day out, in the first person singular. Newspaper columnists write this way and for the largest following of readers in the country.

It was a simple but brilliant piece of reasoning which led to the recognition that an adaptation of the style which builds reader following for a columnist was currently the greatest single unused implement available to a store copy writer. Certain details of explanation and readjustment were necessary to the successful introduction of this new copy into advertising. I shall not burden you with these."

The significant point is that the complex problem of copy yielded to the process of orderly analysis and was successfully practiced under strict and arbitrarily established ruling principles just as had happened earlier in the case of the art style."

The next problem we considered with regard to advertising was the choice and use of media. Both buyers and sellers of advertising customarily

make a magnificent pretense of scientific method in dealing with this problem. Sellers of advertising produce impressive brochures, creeping with statistics and data of all sorts. These analyses are often incorrect and almost always incomplete, but in a sense they are really exercises in rhetoric, not in logic. The logical difficulties do not seem unduly to trouble their authors. Any important newspaper is prepared to tell a prospective advertiser its total numerical circulation and the geographical distribution thereof. It will further explain, at the drop of a hat, the income, composition, and purchasing habits of its reading audiences. It is not unlikely, if pressed to do so, to produce further information relative to its total advertising lineage, its editorial and news appeal, and the dollar amount of various kinds of goods and services which have been demonstrably sold through the exclusive use of its columns. These areas of information are pertinent and helpful, and I do not wish to deprecate them.

The accumulation of these data has been an intelligent and progressive step on the part of newspaper publishers, and it has tended, at least partially, to illumine hitherto unillumined areas. I·have found, furthermore, an enviable record of honesty on the part of the newspapers in the presentation of this material. It is a conscientious craft, and they are disarmingly frank in explaining, even to a prospective purchaser, the limitations of the data and the consequent possibility that the analysis may not be altogether correct. It is only fair to add, however, that as

a craft, they are not only conscientious, they are also highly persuasive.

If you received a presentation from the advertising managers of say, the half-dozen leading New York newspapers, you would very probably find yourself in a state of mind so muddled as to be downright pitiful. Each of these gentlemen would give you incontrovertible proof of the undeniable superiority of the publication that he represents. He would leave you with a strong impression that any advertiser who chose another publication in preference to his own could not, if you knew what he meant, be quite right in the head and was no doubt overdue as a fit subject of study for a psychoanalyst. Prospective advertisers, to these gentry, are like bear to the ardent huntsman, and when they call on a client they come, to do them justice, loaded for bear. You can't blame them for all this, but it still remains tolerably true that among six newspapers not every one can be the undeniable superior of all the others. Hence the advertiser finds himself with a problem of analysis on his hands.

The first sensible step in a proper analysis of this problem is for the advertiser to eliminate from his mind the false dilemma which is generally put up to him as the only choice : that is, should he use this newspaper or that newspaper ? That should be the final decision, not the first one. The first one is to decide which of the entire list of all different kinds of media are suited to any or all of his needs. He doesn't have to choose

just between two newspapers. His choice may
range among the media of magazines, news-
papers, radio, movies, billboards, direct mail,
package enclosures, car cards, and so on for quite
a respectable list. Depending on the size of the
budget to be expended, he may be able to choose
several of these, according to their fitness to his
individual purpose, or he may be forced to choose
one. In any event, he will first sort out, to some
reasonable extent, the relative merits of each,
unless he chooses to decide the issue by the more
accustomed method of tossing a coin or choosing
the medium whose sales representative seems to
him to be the most pleasant.

It is at this point that the sales presentations
of the sellers of advertising become subject to the
accusation of incomplete analysis. I have never
seen a presentation which gave the comparative
cost per person reached of all of these different
media. I have never yet seen a presentation
which gave the comparative dollars of customer's
response per person reached for these same media.
I have never seen a presentation which gave, in
any acceptable way, information on the degree
of overlapping of audiences between these media.
I have never even seen the last two questions
satisfactorily answered as between newspapers
operating in the same area. I don't, I might add,
expect to see these things for a good long time
to come. They're costly and difficult answers
to procure. Yet it must be clear that these
three questions are crucial to an intelligent
decision.

Someone might ask : if I don't expect for a long time to see the answers, why bother to ask the questions ? I hope that having read thus far in the book you have ready the proper reply to any such challenge. The reply is, of course, contained in the second general rule for better thinking in Chapter 6. The rule is : state the problem. These three questions are all necessary and vital parts of stating the problem correctly, and if you believe, as I do, that the real statement of a problem is apt to bring with it some accompanying light on the problem, even though the final and definitive answer may not be within your grasp, then you will know why I have made what I think to be a fair criticism of incomplete analysis. The criticism does not stem solely from the fact that in my experience the questions have not been satisfactorily answered—it arises more, as I have suggested, from my finding that these three indispensable questions were so rarely asked, by either buyers or sellers of advertising. That's a fault in logic, and millions of advertising dollars are wasted annually because of the fault.

I shall not attempt to supply you with any demonstrations of good thinking which have achieved successful solutions in the choice of media. This is a local, very detailed, and highly individual kind of problem. I know of such solutions—a few—but I am afraid that the amount of documented background with which I would have to provide you in order to orient the locus of the solution would be out of all proportion to the value of the demonstration.

The fourth, and by all odds the most important and thoroughly tough problem in advertising, is the problem of the choice of message. You may have just the right media, the most exquisite pictures, and the most beguiling word descriptions of the product to be offered for sale in an advertisement. If, having these, you have chosen the wrong product to advertise, or the wrong message to advertise about it, your advertisement will be, in the Biblical phrase, " As sounding brass or a tinkling cymbal." · I am going to delve a way into this subtle problem in the chapter on merchandising, which is the head under which I think it more suitably belongs.

There are at least two other major parts of the total publicity problem besides advertising. One is publicity ; the other is public relations. Supposing we take public relations first.

Public relations may be defined as the sum total of all of the impressions registered in the public consciousness and subconsciousness about a company or other organization. These impressions come from many sources. They come at firsthand from every physical contact which may be had with a company : its advertising, its product, its personnel, its activities as a corporate entity (which are different from the activities of the individuals who make up the organization), its policies, its practices, its manifestations in the realm of business and in realms of action not strictly within the business sphere. Everything

a company says or does, or fails to do or say, can be contributory to one or another of the numberless impressions which make up the sum total. In addition to firsthand impressions acquired by the individual as a result of personal experience of any or all of these manifestations, further impressions come into being at secondhand: that is, through word of mouth.

Mr. A patronizes a company and tells his friend B that it is a good company. B, in a casual conversation, repeats this to his cousin C. C, who has never even heard of the company before, makes a mental note, probably subconsciously, that if he ever gets ready to purchase the kind of goods or services marketed by this particular company that he will give them a try on the strength of what he has heard. Such are the sources of the impressions which make up public relations.

All sorts of organizations seem to have become increasingly desirous, of recent years, of so governing their actions as to insure producing on the whole favorable impressions about themselves in the public mind. Over the past few decades, experts have sprung up under the title of public-relations counsel. They stand ready, for a due and proper consideration, to advise organizations as to how these impressions may be created and controlled. I think it is a proper field for experts. The range of knowledge, experience, and skill necessary to solve the problems involved is not such as is likely to come within the ken of

the ordinary person. Again, however, it is like advertising. It is susceptible to good orderly analysis, and should not be made a mystery. The good practitioners don't.

The moral virtues become of especial and paramount importance in the field of public relations. Justice, courage, temperance—if you want to choose a single virtue, absolute rock-bound honesty—are the meat and marrow of good public relations. Would-be clever tricks and insincere, hollow gestures of appeal, together with ill-advised and extravagant efforts to obtain attention at any cost, are its vices. Abraham Lincoln would have been a superlative public-relations counsel for many reasons, but first and foremost because he knew that "you can't fool all of the people all of the time."

Good public relations for an organization are not very dissimilar from good public relations for an individual. It involves such things as good character, right intent, some of the social graces, such as good manners, and, of course, some adequate measure of ability to deliver the goods. Some companies understand these things well and do them well. More do not. I know of only one company which has really subjected the entire problem to a comprehensive orderly analysis and is today governing its public relations by the principles and according to the formula that the analysis provided. It is, however, a method available to anyone who wants to learn good analysis and then apply it.

Publicity activities, so called, are one of the implements of a public-relations program. They include a variety of what might be called extracurricular activities designed to draw public attention to a person or an organization. Some of these activities, cooked up in the overheated brains of press agents, have been flagrantly dishonest and disreputable. Others have been dignified and appropriate portions of a well-conceived and well-rounded program of public relations.

The underlying concept of properly directed publicity activities is something like this. Business organizations, deriving their support from their community, wish to indicate that, although they are commercial institutions, they are prepared to take a suitable interest in and proportionate responsibility for general community welfare. In an effort to demonstrate such interest, they undertake one or more ventures, whether of a cultural, recreational, or merely utilitarian sort. The annual Thanksgiving Day Parade for children, now become a tradition in New York City, represents such an item in the publicity program of R. H. Macy & Company. The Toscanini concerts, given to the public by the Radio Corporation of America, General Motors' Futurama at the 1939-New York World's Fair, the free information service offered by *The New York Times*—these are random examples of worth-while activities in the field of publicity.

You can easily see that publicity of this kind is nothing other than a type of genuine public

service. It may be a service closely associated with the commercial activity of the company, or it may be something quite remote and altogether apart from the company's sphere of business. As an example of the latter, I cite the case of a large department store which recently underwrote performances of the New York Metropolitan Opera Company and the Philadelphia Orchestra in its city, although these musical performances have no direct connection with its business, and accordingly could not conceivably have produced any direct return of any sort for the store.

I have tried to indicate to you the relationship of these publicity activities to the entire publicity process—that is, how it fits into the publicity priority of problems—but I have not yet shown what the application of orderly analysis can do to cast light on certain of the problems inherent in these extracurricular activities. Since the main problem in these activities is to choose, from the myriad possibilities, those relatively few which are best suited to the purpose, it becomes again a question of constructing a check list of theoretical requirements to which any such activity must conform in order to be acceptable. Such a list is not hard to compile. I am not going to furnish you with a complete one, but shall content myself with mentioning one or two items which may be suggestive. The first and most valuable, to my way of thinking, is the one which says that it is not enough merely to get the name of a product, a person, or an

organization before the public in a conspicuous way. Unless it is done in a way that will draw credit and approval as well as attention, it had best not be done at all. This would not be a popular principle with certain kinds of press agents and publicity counsel, but it would surely save a number of poor, benighted clients from defying nature and making twenty-four-carat jackasses out of themselves.

Another useful principle in this connection is that one important effort reaching a large number of people is worth ten unimportant ones, even if the ten in the aggregate reach an even larger number than the one.

A third pertinent requirement is that the activities should, wherever possible, be memorable as well as creditable. I leave the completion of the list to you.

Two other activities in the publicity field I mention for the sake of completeness, but do not discuss. One is institutional advertising, the other free publicity. I think what I have said in the rest of this chapter gives you clearly the clues as to what my own analysis would be of the objective to be pursued and the methods to be employed in these two activities.

Application of Thinking to Financial Control

STATISTICS have become such accepted para-
phernalia in modern living that we scarcely
ever stop to ask ourselves what they really are.
Statistics are to business what mathematics are
to logic—a shorthand record of ideas and a
specialized technique for the arrangement of these
ideas. The advantage of the use of shorthand
is not far to seek—it saves time. The advantage
of the specialized techniques for arranging the
ideas contained in the shorthand is worth a little
further investigation.

To start with, we may reasonably ask the
question, "Why should a business keep any
records, shorthand or otherwise?" There are
two reasons, and only two reasons why this should
be done. I wonder how many of the thousands
of people who today are either compiling or
using statistics could, without hesitation, tell you
what those two reasons are? All the people who
are in the business of compiling statistics and
gain their livelihood thereby certainly should be
able to name the two products of their labor which
justify its existence. The many more who use
statistics as a basis for important decisions should
be able to do the same. If you try asking a num-
ber of people, as I have, this question, you may

be surprised to learn how few can answer it—and yet there are only two correct answers possible.

To state these answers in business terms, the first reason for the compilation of statistics is to be able to stay in business at all. The second reason is to be able to conduct the business as efficiently as possible, with a view to staying in business more profitably and over a longer period of time. Stated in nonbusiness terms, the twofold function of statistics is to make an operation possible or to improve it. It is important not only to know that these are the two justifications for the existence of statistics ; it is equally important, in the use of statistics, to earmark them as belonging to one or the other of the two classes. If those statistics belonging exclusively to the first class are so earmarked, then all remaining statistics can be regulated, that is, either retained or discarded, according to how well they serve potentially or actually the only purpose of their existence, which is the improvement of an operation.

Many businesses compile and attempt to us more records than are justified. This is done generally in the vague hope that "they may come in handy some time or other." This is an inexcusable practice. If a business has established those records which are demonstrably and indispensably necessary to its staying in business at all, the burden of proof should be on each additional record introduced to show that it either can or will contribute to the improved

operation of the business. Whole carloads of records would be pushed into the incinerator if measured by this test. Not only would money be saved by their elimination but—what is much more important—time would be saved, and inestimable confusion. If business executives set up a proper priority of problems, one likely result is the prompt discarding of superfluous records, with a consequent ability to save time and attention for those relatively few major problems which are really worth time and attention.

The keeping of needless records is a sin of commission but equally damaging are the sins of omission in the keeping of too few records. Even in the field of statistics, you see, Aristotle's middle path between two extremes is normative. You must keep neither too many records nor too few, and you must keep the right ones in the right way.

I had an interesting experience in this connection some years ago. Two very competent executives from a highly organized large company visited another company, engaged in the same industry in a different city, for the purpose of exchanging figures and information. After a few days' visit, they returned to their own company to report results. " We ran," they said, " into a very puzzling situation. We satisfied ourselves that the other company does not know nearly as much about running its business as does our company. They violate principles which we think are basic to good business, and about

half the time they don't even know they are
violating them. They keep very few records.
They take all sorts of chances. They are slipshod
in theory and sloppy in execution. The face
they present to the public is very good ; that is,
their deficiencies would not be apparent to the
ordinary layman ; but, if anybody who really
understands the business goes behind the scenes
and analyzes their performance as we did, there
is not very much you can respect. With all
this, they do a somewhat smaller volume of
business than our company, and make a larger
percentage of net profit. Now the question we
want to put up to you is : would you rather be
efficient and scientific in business and make
small profit or inefficient and unscientific and
make a large one?"

This was a poser. The efficiently run company
actually had, for the last couple of years, been
making less than a reasonable profit, whereas
the company with which they compared showed
a profit, which, while large, was still reasonable
and not inordinate. It looked like a pretty
telling argument for the good old school of hunch
as against the modern, and possibly pseudo-
scientific, school of business management. The
supposedly more efficient company, with the
lower rate of profit, realised that the elimination
of a large part of its record keeping, which was
the backbone of its effort at scientific method,
would go a long way toward narrowing the gap
between the profit showing of the two organiza-
tions.

The company finally decided, on what I think were good and sufficient grounds, that it was not going to eliminate any of its record keeping, nor was it going to retreat even half a step from its devotion to the principles of scientific management. It made this decision in a perfectly realistic way ; that is, with a full realization that, in a capitalistic society, the measure of success of private enterprise is the amount of profit that the enterprise produces. In other words, it decided to retain its current methods because it believed they were more profitable. This sounds like a paradox and needs to be resolved. The company in question resolved the paradox with two intelligent answers.

"First," said they, "if you're trying to compare the advantages of scientific against unscientific management, the length of time on which you base the comparison is all-important. If we had made our comparison for the past ten years, instead of the past two, we would have been at only a slight disadvantage instead of a great one. If you extend the comparison into the future, instead of into the past, and forecast the profits of our company over the next twenty-five years instead of the next ten, in comparison with the other company, we believe the answer will be conclusive. One reason for this belief is that we don't expect the other company to be in business twenty-five years from now. We expect that they will go out of business as a direct result of their unscientific methods of management. We admit that their inadequate

record keeping will only be contributory to their demise, since it is only one aspect of un- scientific management, but when you add to this their medieval personnel policies, and their me- thods of policy making, which are straight out of *Alice in Wonderland,* we contend that our prediction of an early demise will prove to have been well founded."

That was a good answer, but they weren't through yet. They had an additional answer which I think was a clincher. They went on to say this. "We think that the profit comparison for the past ten years is discreditable to us, and for the past two years disgraceful. We attri- bute this unfavorable comparison not to our use of scientific method but to our misuse of it." The insistence on scientific principles in the conduct of their company's affairs, said they, was right and proper and should have been the instru- ment of higher profits in any year in which a comparison was made. "Our failure," they concluded, "to obtain these higher profits con- stitutes an indictment of nothing except the particular way in which we have misinterpreted and misapplied scientific principles which were intrinsically perfectly good and sound."

That's a very nice piece of logical analysis. It involves a refutation of an erroneous argument through exposure of the fallacy of *post hoc ergo propter hoc.* You will recall that we closed our chapter, "General Rules for Better Thinking," with a word of caution against this very error.

In the same way these executives exploded the argument that since poor profits followed scientific principles, therefore the scientific principles must be the cause of the poor profits.

It is comforting to be able to report that this company, having made a good logical analysis, acted on it, and today its profit position shows the beneficent result of a substantial and healthy correction.

I said that businesses should earmark their records according to whether they are for the purpose of staying in business or of improving the business operation. If they are both careful and realistic in this process of classification, they are likely to be astonished at how few of their records are truly necessary to the first purpose.

One of the things you have to do to stay in business is pay your bills. Complex organizations have departments called "accounts payable" to perform this function. It is amazing how many operations are to be found in the average accounts-payable department which are extraneous and totally irrelevant to the prime and necessary function of paying the company's debts.

Another thing you have to do to stay in business is to pay your employees when their wages are due. Most companies have what is called a "salary office" to perform this duty. It is phenomenal how many operations the average salary office goes through without which salaries could still be duly and properly paid.

A third rather necessary adjunct to staying in business is the collection of moneys owed for goods delivered or services rendered. This somewhat invidious operation is usually discharged by a department called "accounts receivable." It is remarkable in such departments how many things you can find being done which do not appear to the naked eye to have anything whatsoever to do with the collection of bills.

Now, all of these extraneous processes may be fully justified and wise. The important point to be recognized is that they are not strictly necessary to staying in business; therefore, they should be challenged. If they are not serving the second purpose of improving the business they shouldn't be there. If they are improving the business, then certain other questions should be asked. How are they doing it, in intangible or tangible ways? Are they reducing expenses, increasing gross margin, enlarging volume, improving control, or providing desirable insurance? These are the only five ways by which such operations can justify themselves. If they are doing any one of these five things, to what extent are they doing it? What do they cost? And, finally, does the result warrant the cost? All of the foregoing are common-sense questions. All of them can be asked without any knowledge of logic. A person versed in logic would be bound to ask them; another person might or might not. It is significant to note that most people, which includes business executives, don't. Most industrial

engineers will take on any client, sight unseen, for a contingent fee of ten per cent of the reduction of expense that they can effect. The reason they are safe in doing this is because of what I've just said. It's like shooting fish in a barrel— you can't miss.

I have tried to give you some idea of what I meant by the first classification of records really necessary to staying in business. Let us go on to an example of a record that I consider a fundamental instrument for the improvement of business operation. The record I have in mind is called a " profit control," and I want to explain to you why it's necessary and how it works in the operation of a large department store.

Profit control is just what its name implies— a statistical method of controlling profit. For example, a storekeeper takes in every year a certain number of dollars for the sale of his goods. Those dollars stay in his hands only temporarily. He must disburse the largest part of them in payment of two items, cost of merchandise and cost of doing business. Such a man is properly called a " storekeeper " by virtue of the fact that he does keep a store. He is not, however, entitled to be called a " merchant " unless a certain minimum percentage of the dollars which pass through his hands annually as a result of his mercantile operation sticks to his fingers in the form of net profit. Let us name a hypothetical figure of 3% of sales as the modest reward

due to a merchant for the effort he puts into providing his particular kind of service to the community. (It might interest you to know that this figure exceeds the average net profit of all storekeepers in the country today, which will give you a rough idea of what proportion of storekeepers are also merchants.)

Supposing we examine the problem of the storekeeper who says to himself, just before the beginning of a new fiscal year, "This year, no matter what happens, I am going to perform properly and without skimping my service to the community as a retailer and still I am going to end up with the 3% profit which I think is my due." What must he do in order to attempt to insure this performance?

He must first make a conservative forecast of his total volume of sales for the next twelve months. Some storekeepers never make this forecast at all. A great many more, who do, make it by a process which might be compared with putting ten numbers in a hat and pulling one out. Needless to say, there is a better way of doing it. This way consists in using all of the historical data and other sources of information available to establish a probable volume *band* for the year. Our hypothetical merchant, using this method of forecasting, settles, shall we say, on a year's forecast of between $950,000 and $1,150,000. By this he means that if the year brings all sorts of unforeseen and unfavorable events, he still cannot imagine, short of a real

cataclysm, selling less than $950,000 worth of merchandise. If, on the other hand, all circumstances during the year are propitious for his enterprise, he thinks he might, with luck, reach the top figure of $1,150,000 in sales. As the first step in establishing his profit control he selects the conservative figure of $1,000,000 as his sales forecast.

His next problem, in constructing a profit control, is to predict the likely cost to him of the merchandise for which he expects to get $1,000,000 at retail. Again he constructs a probable *band.* Let us imagine that his conservative choice of a figure out of this band is 65%; that is, he will pay during the course of the year $650,000 for his merchandise to be sold. This leaves him, after paying for the merchandise, with $350,000 left over to pay for everything else. He has decided in advance that he must make a $30,000 profit or 3% on $1,000,000 worth of sales. He knows, therefore, that if the rest of his predictions are fulfilled, he has exactly $320,000 for the entire year for every expense that he may incur in the course of doing business.

He is now in possession of goal figures for the entire year, but for these figures to be usable, they must be subdivided in two ways, into shorter periods of time and into functional subdivisions of elements. If his business is a typical one, he will divide the figures into two six-month periods, spring and fall, and then subdivide each of these seasons into twenty-six weeks. Each week will

be assigned its proper proportion of sales, dollars of gross margin, dollars of expense, and dollars of profit or loss. Many weeks will show a net loss because of the seasonal character of retail distribution. It is not unlikely that this merchant will show, even under his goal figures, a small loss for the entire six months of the spring season. His weekly plan will also, of course, show a fluctuation in sales and in gross margin. In subdividing these three sets of figures, sales, gross margin, and expense, functionally, he will proceed somewhat as follows :

The total sales figure will be divided into sales by departments ; the total gross-margin figure will be divided into such elements as mark-on, markdowns, cash discounts, and allowances for inventory shortages. His expense might be divided first into salary and nonsalary, and then salary into buying, selling, and operating, and his nonsalary into rent, taxes, and miscellaneous overhead. I give you all of these details to show you that our hypothetical merchant has a very great mass of technical data to arrange into patterns, and so you may well conclude that unless he knows something about the methodology of arranging data into patterns—that is what we've agreed to call logic—he will unavoidably be furnishing us with just one more example of the man who plays a game for high stakes without knowing either the rules or the instruments. We're assuming, however, that this particular merchant does know the rules. Let's see how he progresses.

So far we have seen him complete the setting up of a year's goal figures, subdivided into weeks and functions. What must he do next? He must take a good-sized notebook containing fifty-two large sheets of paper, and he must number these sheets from 1 to 52 and divide each page horizontally in half. In the lower half, he will enter, on one side of each sheet, the goal figures for the particular week that it represents, and the cumulative goal figures from the beginning of the year up to and including the week he is entering. He will then rule off other columns on the lower half of each sheet wherein he provides spaces to enter last year's actual figures and the coming year's actual figures as they materialize, both to correspond in type with the figures he has already set down for goals. He must provide columns to show not only this year's difference from last year, but this year's difference from goal. He must then set up necessary mechanics to assure him of having each week's figures of the coming year not only very accurately, but very promptly after the close of each week.

Now what does all this technical machinery enable him to do? First, it enables him to do something which, to my knowledge, no large department store in the country does today, that is, know where it stands promptly after the close of each week. I can almost hear the protests, from all over the country, of merchants who say. " Of course we know where we stand. No merchant would try to run a business without this kindergarten information you have been

describing." The plain fact is they don't. They don't have all the figures as I've described them, and whether they think it or not, they don't really know where they stand every week. This does not alter the fact that they ought to.

You may be sure, however, that if they do not have as obviously desirable information as that which I have just been describing, there must be reasons for it, and if they think they have the information accurately and don't there must be reasons for that too. The reasons are these: department stores are highly intricate and complex mechanisms. The statistical and mechanical skill necessary to the prompt weekly furnishing of accurate information along the lines I have indicated is no mean task. The only large store I know of that has this information has on its executive staff a very highly trained professional mathematician who devised the statistical formulas which are a necessary part of the process. This store uses costly and elaborate electrical bookkeeping machines. Without these the information would be either impossible of acquisition or could be acquired only at prohibitive cost. The store I have in mind is one of the very large stores in the country and hence the complexity of its problem is many times multiplied over that of the average store. What the average store, large or small, does have is a set of bookkeeper's approximations of the true condition of the business, with a minor correction of figure errors scheduled for once a month, and a more or less major reconciliation twice a year.

The point of the profit control that I am out-
lining to you is, first and foremost, to demonstrate
the application of good thinking to a crucial
business problem. It is fair to point out also,
however, that in smaller and less complex
businesses than the particular store to which I
referred, this method of profit control can be
advantageously applied without higher mathe-
matics and without benefit of machines.

To return now to the theory of the profit
control, its most complicated function is in the
control of expense. Here I shall make a com-
parison. The most simple, efficient, and direct
form of expense control that I know of is practiced
by the person who has, say, $15 a week income
and not another penny in the world to draw on.
Comes Saturday night, that person knows whether
he has spent $14, $15, or $16 during the past
week. If he has, by running up a bill, spent
$16, he knows beyond the shadow of a doubt
that there is a dollar that must be made up.
He may decide to save the entire dollar out of
next week's income. If this is too much of a
burden, he may save fifty cents the next week
and fifty cents the week after. In any event,
the one sure thing is, that dollar must be saved
and so, generally speaking, saved it is. De-
partment stores, because of their aforementioned
complexities, have generally assumed, when they
got to a certain size, that it was no longer phy-
sically possible for them to put themselves in
a position similar to the $15 person and to know
every Saturday night whether they had a debit

or a credit for the week and how much. (Knowing Saturday night is not really quite feasible for a department store. Knowing Tuesday afternoon is not only feasible, it is highly necessary, if any profit control worthy of the name is to be exercised.)

There would be little value in a store having this kind of information unless it had another point of similarity with the $ 15 person—that is, a large enough part of its weekly expenditure controllable so that if it knew that it was out x dollars this week it really could do something practical about making it up next week. It must be quite clear that both factors are indispensable to an executive profit control. You must know promptly every week whether you over-or underspent and by how much. You must be able to do something about it. I know of stores doing millions of dollars' worth of business a year which don't know these things. Accordingly, the annual results of their operations are never, in a strict sense, pre-determined. Their methods are controlled in only the most approximate way and their profits or losses, instead of being the outcome of a prearranged plan, are simply the uncontrolled results of a series of variable factors.

It may well be hard for you to believe that businesses operating on as minute a percentage of profit as department stores customarily leave the outcome of their ventures as much to chance as I have indicated. I can assure

you that such is the case, and I can assure you that it is largely attributable to a failure to apply the ordinary processes of good logic to the problem.

To complete the description of the lower half of the profit-control sheet, it should be noted that it must show week by week the excess or deficiency of net profit as against goal profit. This difference in profit should be accounted for by attributing to each of the three ingredients —sales, gross margin, and expense—its individual contribution to the total profit discrepancy. If a business is a thousand dollars below its goal profit for the first four weeks of the new year there would be no sense in trying to correct the expense trend if the fault really lay with the percentage of gross margin.

The upper half of the sheet is to contain exactly the same kind of information as the lower half except that the upper half always shows these figures for the fifty-two weeks' total ending last Saturday night. This is what statisticians call a moving average. It has the effect, through the processes of deseasonalizing and proper weighting of certain figures, of telling you at what annual rate your business is currently operating. To revert to our original example of the merchant planning a million-dollar business, it should be of extreme interest to him to know whether currently he is at the annual rate of a million-dollar-a-year sales or not. Finally, he should want to know every week whether he is moving

at the rate of a thirty-thousand-dollar-a-year net profit or not. If he is below this figure, he has a choice. He may decide to revise his minimum for one or another reason and accept, say, a twenty-thousand-dollar profit for the year in question or he may decide to stick to his original minimum and take the necessary steps to recover the ground lost and insure his thirty-thousand-dollar profit.

In any event, by the computations represented in the upper half of the sheet, our merchant demonstrates that he understands the dynamic, or moving function of statistics, as well as the static function which portrays a condition at one artificially arrested point in time.

The all-important fact involved in the whole technique is this : decisions should never be made in ignorance, and by default, when it is perfectly possible to make them out of knowledge, and wisely. Only the merchant who has provided himself with a profit control can make these decisions out of knowledge.

I remember very well, some years ago, when a statistical device called " merchandise control " was introduced into retailing. This was a simple set of figures telling the buyer weekly how many items he had sold of each kind, how many dollars the sales amounted to, how many dollars of stock remained on hand and so forth. Ninety per cent of all the really skilled buyers in the country rebelled against it and said it was a new-fangled notion and nonsense. Their argument

was that any buyer who was worth his salt knew all these things without having to wait for some statistician to turn in a weekly report. " If he didn't know them," said they, " he wasn't a buyer." It turned out that by that definition none of them were buyers, for when these records were forced on them they were painfully surprised to discover how many things they would have sworn they knew about their business that they didn't know. It's much the same way with profit control, or any other new device. Even if—I had almost said *especially* if—the new device constitutes an advance in the art, many people will be found to say, " It is not new "; " It is not good." I leave it to your judgment as to whether this is the attitude which best enables an individual to march along with the march of progress.

I want, before I leave this subject of statistics, to give you one more example, from the retail field, of an application of thinking to figures. The obsolescence of a store's physical plant is extremely rapid. Stores are constantly forced to spend large sums for the purchase of new fixtures, new types of lighting, rearrangement of layout and furnishing, and all of those physical bits of modernization and rehabilitation needful if the store is to present an up-to-date face to its public. Under typical store bookkeeping these expenditures are charged against the store in one of two ways, either as a current operating expense, to be completely paid for within the current operating period, or as a capital expense,

to be amortized over the probable useful life of the physical change which has been effected.

You would think, under any proper theory of profit control, that stores would so adjust the amounts of their current and capital outlays for plant as to accomplish simultaneously necessary modernization and adequate minimum annual profit. Doing this requires rather a nice bit of mathematical calculation. It involves, in the case of our merchant with the million-dollar sales, a process of this sort. He knows that he has $320,000 to cover all expenses for the year. He knows that $20,000 of it must be earmarked to cover past amortization which will fall due during the coming year. He must then decide how much additional burden he can support, for plant outlay. He may decide that he can afford another $30,000. He finds, upon careful figuring, that $25,000 of this is probably going to have to be spent in what he must classify as current operating expense. This means that he can, for the coming year, add no more than $5,000 in extra amortization charges. He might, on the basis of this, decide that this is a year that he can afford to put in air-conditioning throughout his entire store, figuring that it will cost him $100,000 to be written off over a twenty-year period, or, in other words, exactly $5,000 of it (which is precisely what he can afford) must be charged into his coming year's figures. It would appear self-evident that there is no short cut to the successive steps in arithmetic indicated above. You follow that process or you cannot be said to

be controlling plant expenditure with relation either to profit or to the ability of the business to pay.

There is at least one other phase in the problem of plant expenditure in stores which is worth some attention as a problem in analysis. Plant expenditure is, in general, of three kinds and should be so classified, as a basis for judgment. First, there is the plant expenditure which is necessary to staying in business at all. If you need a new boiler to heat your store you've either got to buy it or go out of business. Customers aren't likely to come in to shop in ear muffs. Also, in this category of expenditures necessary to staying in business, I include those needs which are not quite as primary as heat and light but are still parts of what might be termed "minimum respectability." A storekeeper can't, for instance, well afford to have tattered carpet on the floors or jagged splinters in the counters.

The second category of plant expense has to do with those changes which can be, with near certainty, predicted to produce, as a direct result, an extra profit within a short fixed period of time. If a merchant knows that by spending $10,000 for a modernized dress department, he can within twelve months recapture the $10,000 expended and make $1,000 profit in addition, he should do so. Companies in a strong financial position should assume the attitude that the funds available for these first two categories of plant renovation are unlimited.

The third class of expenditure, for which the funds should always be considered limited, and which should be closely controlled, is a category which might best be described as " store prettify- ing." " Let's do over the third floor," says the owner one day, or, " Let's change the lighting through the store," or, " Let's have a new color scheme throughout." These things are frequently worth doing, but the sensible merchant asks himself : " Would I rather do this prettifying this year, or make a sufficiently respectable profit so that I can call myself a merchant ? "

I think I shall close this chapter by explaining to you my own reasons for believing that the true merchant properly regards profit as the end of business and the measure of its success. Many people would say that no explanation is necessary. The merchant wants to line his own pockets and those of his stockholders, and that's that. I think this is a superficial and incorrect analysis. Here is what I consider the true explanation :

Unprofitable businesses are a burden on the community in every way. A business without a satisfactory profit margin is not likely to engage in bold new ventures which might greatly increase its value to the community but which necessarily entail risk that the unprofitable business is in no position to undergo. Unpro- fitable businesses tend to scrimp and scrape all the time on the service that properly they should render the public. Unprofitable businesses pay low salaries for the most part, and since their

employees are, in addition, members of the community, this condition tends to increase the number of hard-working but dissatisfied people who do not enjoy what they consider to be the proper fruits of their efforts and who, besides, are not able to add proportionately their full measure of those consumer expenditures which help a community to flourish. In a word, unprofitable businesses are bad performers. We all prefer good performances to bad, and a reasonable profit is an inseparable part of good performance in business. To complete the circle, a proper use of statistics is necessary to continuing reasonable profit, a proper understanding of logic is necessary to the efficient use of statistics, and there you are—back again to our original problem of *how to think.*

Application of Thinking to Management

MANAGEMENT, in department-store terminology, labels the function whereby general operation is controlled. After merchandise has been bought, management is responsible for most of the subsequent mechanics of getting it into the customer's hands. Management receives the merchandise, marks it, puts it in stock, sells it over the counter, wraps it, delivers it, services it, and adjusts any subsequent complaints arising out of the customers' receipt or nonreceipt of the merchandise. Thus the functions of management have two phases : everything having to do with getting the work done, or operation, and everything having to do with the people who get it done, or personnel.

The routine part of the operation phase consists in just barely getting the job done. The creative part consists in getting it done better, more imaginatively, and with greater benefit to consumer and distributor alike, Because management has habitually been considered, by top retail executives, to be a kind of service adjunct, or necessary evil, in the total processes of retail distribution, it has tended to lag behind the other branches of the business in the use of creative imagination. This is not because the scope is not there for bold

and resourceful thinking and the invention of
new ideas. It is, rather, because where little is
expected, little is forthcoming. Store manage-
ment in this country furnishes, in my opinion at
least, another striking evidence of the invincible
forces of inertia.

But you have also in store management a
most interesting example of the power of seman-
tics, the ability of the word to control the action.
Management departments are, in department-
store terminology, classified as selling and non-
selling. Among the nonselling departments you
will usually find included such activities as the
telephone-order department, the adjustment de-
partment, and the correspondence department.
I can scarcely think of any group of department-
store employees, including the salesclerks them-
selves, having more of an opportunity to sell
merchandise and create good will than these three
so-called nonselling departments. Nevertheless,
such is the power of the word that, because they
have been called nonselling, they have in fact been
nonselling.

The function of an adjustment department is
to find out what it was the customer wanted
in the first place, before things somehow went
wrong, and then get it for her—that is, sell it
to her. People don't go into stores to buy things,
and then complain about them for the sheer joy
of it. They go into a store to buy something
because they want it. If they complain, it's
because, in one way or another, they didn't get

what they wanted. And yet, by some strange logic, adjustment employees all over the country are engaged in devoting their full-time energies largely to seeing to it that whatever it was the customer wanted and didn't get, she continues not to get. The slogan seems to be: " They shall not pass."

A customer says to an adjuster, " The shoes I bought in your store don't fit," or, " The curtains faded," or, " The electric toaster burnt out too soon." The earnest adjuster then bends all his efforts to proving that the shoes really do fit and they'll be comfortable if she will only break them in a little longer, or he calls in the salesclerk to witness that the customer has maliciously acquired a bunion since buying the shoes and that the store can take no responsibility for such irregularity, and that furthermore, even if the shoes don't fit, the customer should have complained about them before wearing them, because now they're unsalable.

I once spent five long years running a management division in which was included the complaint department of a large store. A good part of my time during this period was spent in trying to train adjusters to believe, and act on the belief, that theirs was a selling, not a nonselling, function ; that they were called in when something had gone wrong with the original sale, and that, therefore, they needed to be not merely bachelors but masters of salesmanship in order to acquit themselves creditably in their duties. I think,

in some measure at least, I succeeded. I think
the people working with me at that time did
believe in this and did act on it. I know that
to the extent that they acted on it, everybody
benefited. I told them that our theories of
adjusting had nothing whatsoever to do with
that time-worn piece of twaddle: "The custom-
er is always right." I told them that, so far
as I could make out, the customer was right
about half the time. I told them that whether or
not the customer was right was mainly irrelevant.
The real question was, right or wrong, what were
they, as adjusters, going to do about it ?

' It requires no profound exercise of the faculty
of reason to recognize that the three departments
I described are selling, not nonselling depart-
ments. This recognition was not original with
me. It had been known for many years and by
many people. But although the knowledge was
in the public domain, action upon the knowledge
was not. I think one reason for this may have
been the fact that some rather close analysis
was necessary for the laying down of practical
principles which would enable these groups to
perform efficiently their true selling functions.

Take, for instance, the case of the handling
of telephone orders. In large stores this is
generally handled in one central telephone room
where a group of trained operators, having access
to all necessary information, receive and handle
all telephone communications from customers.
The cost of maintaining such centralized service

is, when properly computed, probably lower than a decentralized service, but, being centralized, it looms up as a large single item of expense and is generally being subjected to constant management pressure for reduction. Now, it costs money to sell. A centralized telephone-order service costing $100,000 a year, and doing no selling, might cost $120,000 or $130,000, if it was doing a proper selling job. The mere fact that a proper selling job would probably bring back to the store not only the $20,000 or $30,000 invested, but another $20,000 or $30,000 on top of that in net profit, is a matter of large unconcern to any management which has its priority of problems so poorly calculated that it considers its sole function in business to be the reduction of expense, regardless of the effect on customer service, volume of business, or profit.

This form of error is actually an all too common occurrence. I remember particularly well an instance of the sort which occurred in a store management before that management had established a proper priority of problems. It was a store in the Middle West, doing a sizable volume of business. Fifty-five per cent of its business was done through charge accounts, and it had in past years conducted intermittent campaigns to acquaint people with its charge-account facilities and open new accounts. When the episode I am relating occurred, they had formed the opinion that the store had reached a saturation point of possible charge accounts in its trading area. They had decided this on two grounds:

first, they couldn't afford to spend more than $4 per account in getting a new account, and they had discovered that it did cost them $6 or $7 per account to add new accounts to the books, and second, they had all the accounts that were worth having, anyway. I asked them what the average account spent per year in their store, and they said $125. I asked them what the average life was of an account in their store, and they said ten years. I asked them what was their publicity cost in their store, in per cent to sales, and they said 5%. I then asked them, if they were willing to spend $5 per $100 through advertising to get business, by what reasoning had they decided not to spend the same $5 per $100, or, in other words, $62.50 per new charge account, to obtain new accounts on their books ? They agreed that there might be something in this, and that accordingly spending $6 or $7, instead of $4, to get a new account was not out of proportion, in view of the fact that $62.50 would itself have been no more than their average publicity investment. I asked them if they would withdraw their second theory about having all the accounts worth having, in view of their own admission that for an expenditure of $6 or $7 apiece, they could obtain a lot more desirable accounts. They said they would.

I then asked them to compute, at $7 per account, the total expenditure involved, if they were to approach every charge-account prospect that could be entered on their books, with a

view to opening an account. They came back with a figure of $50,000. I asked them if they were sure, from past experience, that the $50,000 expenditure would get them seven thousand new and active accounts. They said they were sure. I then asked them what their next step would be. And, believe it or not, their answer was that they would spend the $50,000 over the next five years, so as not to incur too much risk or too much expenditure in any one year. I asked them if they had $50,000 in the bank and they said they did. I then asked how quickly it could be spent and they said that it would take eight months to do the job properly. I told them that it seemed to me their only problem was to see how quickly they could spend this money, not how slowly. They succeeded in spending it within the year, and the results amply justified the investment.

The late James McKinsey, who was, at the time of his recent death, chairman of the board of directors of Marshall Field in Chicago, had a formula that he applied over many years to practically every business problem which was brought to him. I am quoting this formula from memory, as I once heard him outline it, but I think my quotation is substantially correct. He said that his commonest experience in business was to have people come to him and ask whether a particular operation should be performed this way or that way. Their concern, in other words, was almost invariably with a question of method. It was his uniform custom to refuse to consider

the question of method until five prior questions
had been satisfactorily answered. His first
question was always: " What is your objective
—that is, what are you trying to accomplish ?"
His second question was: " What people are
available to do the accomplishing—that is, what
is your situation with respect to personnel ?"
His third question was: " How do these people
fit into the total operation and what are their
duties—that is, what is your organisation chart ?"
The fourth question was a request for a descrip-
tion of the physical plant in which the operation
was to be executed; and the fifth question had
to do with the financial resources that were
available. Only in the light of such information,
said Mr. McKinsey, can anyone intelligently
determine the superiority of one method as
against another for the performance of a parti-
cular operation. This was a most excellent
example of the application of good thinking to
management problems or, in fact, any problem.
I am told that early in life Mr. McKinsey received
part of his education in a Jesuit college. You
must know that the teaching of the subject of
logic is part of the standard curriculum of such
a college. This may help to explain Mr. Mc-
Kinsey's precise and orderly habits of thinking,
of which the above formula is just an isolated
example.

Everything we have so far discussed in con-
nection with management has had to do with
questions of method—of how things should be
done. There is, in my judgment, no better

summation of the answer to how thinking should be done in management than is contained in the McKinsey formula.

We noted that questions of operation—or how to do things—was only a part, and probably less than half, of the management problem. The rest of the problem has to do with the people who do the things—the entire list of problems included under the word *personnel.* These are the most subtle and difficult problems that occur in business. Better brain work is required for them than for any other problem. It is usual to assume that exceptional talent is also required for effective action to be taken in this field, even after right decisions have been reached. I should say, however, that ability to execute well in this field is the commoner quality, whereas the ability to think well is of the greatest rarity. Really good thinking on these problems tends to produce, as I have elsewhere indicated, greater and more durable benefits than can be realized from almost any other kind of thinking in business.

I am not going to try to give you any examples of good thinking on personnel problems other than what I've already given you earlier (in Chapter 8). Without the most detailed portrayal of the particular conditions under which a particular personnel problem was met, a description of the solution would be meaningless.

You may rightly gather from the way I have treated management in this chapter, as contrasted with my treatment of problems in the

other fields of business, that the important problems in management, that is, the ones that lie beneath the surface, are not very susceptible to useful generalization. One of the main reasons for the low power of generalization in this field has to do with the dominant part played by the human factor and the immense number of variables included in that factor. Countless books have been written on management problems in an effort to create useful principles. The more obvious principles have been well codified and are to be found in almost any good book on the subject. The more important and less obvious principles have not, to my knowledge, been captured, and I am far from sure that they ever will be. They are really inseparable from the completely general principles of right wanting, right thinking, and right acting. The book which adequately described these principles would be a great book, not in business management, but in philosophy.

Application of Thinking to Merchandising

WHEN I WORKED for Oswald Knauth, some years ago, I used, frequently and regularly, to hear him say, " The business of merchandising is merchandise." Mr. Knauth, now president of Associated Dry Goods, Inc., is one of the great present-day merchants, not because of the position he holds, although that would imply such an attribute, but rather because he is, in my humble judgment at least, a man who knows how to think and does. His definition of merchandising is a fair evidence of this, and has in it a great deal more profundity than might at first appear. Merchandising is saturated with policies, axioms, theorems, and techniques which assume, to the unwary practitioner, the false appearance of being ends in themselves. Many people engaged in merchandising truly believe that the measure of a good merchandiser rests in his ability to achieve high mark-on, or low markdowns, or high stock turn, or efficient assortment control, or any of the other hundred and one shibboleths which are only the outer covering of merchandising. Mr. Knauth sees through the outer flesh and through to the bony structure which supports it, and records what he sees in a simple comment : " The business of merchandising is merchandise."

The pure test of the merchandiser is whether he procures the exact very article that people want to buy. Statisticians are to be had, at low prices in the open market, and in carload lots, who will look after the details of merchandise control or stock turn. These are, of course, essential details. The most skilled merchandise selector in the world will go broke if he persistently buys greatly in excess of demand or is repeatedly guilty of similar merchandising abuses. But avoiding these abuses is child's play compared with the acquisition and exercise of positive skill in the crucial problem of merchandise selection.

Let me make a roundabout approach to this problem instead of a frontal attack. I stated, in the chapter on publicity, that the three key questions in publicity are " whom to talk to," " what to say," and " how to say it." I said that the second of these questions represented the overlapping, or common area, between the functions of publicity and merchandising. Let me show you how this works.

A given store advertises the year round in a certain newspaper, taking one full page a day, four days of every week. The store has the problem of what to say in these pages. One of the clarifying ways of tackling this question is to liken one year's advertising to the writing of a two-hundred-page book. When the book has been written the store should be able at the close of the year to bind up the two hundred sheets

and truthfully say in retrospect, " This is the story
of our store. It is a comprehensive and eloquent
interpretive record of what we stand for. It
tells the story of our goods, our services, and our
personality." Most stores don't do this. If they
did, retail advertising might not make quite such
dull reading. Even if a store decided to do this,
however, it would have several large problems
on its hands before it could even begin to execute
its program. The one that I am here concerned
with is the primary one of what goods to advertise,
thats is, " what to say."

The question of what goods to advertise is the
common meeting ground of the publicity and
merchandising functions. Publicity and mer-
chandising executives should answer the question
jointly. But only the merchandising executives
can control what merchandise is to be found on
the store shelves, and only from the merchandise
on the shelves can the choice be made as to
what to advertise. Hence, we must carry this
analysis back still a step further to the question
of what merchandise should originally be
bought, even before any question of advertising
arises.

We have already indicated, at least by inference,
the position of merchandise itself in the hierarchy
of total store problems. We have stated the
problem—what to buy. Some rather close an-
alysis is needed here. At this point the question
should be asked : what information should be
collected as the first step toward a solution, before

we commence to take the second step of arrang-
ing the data into patterns?

The question of what to buy implies the ques-
tion : for whom ?   Therefore, the first section of
information to be procured is necessarily infor-
mation about the prospective purchasers.   Who
are they ?   Where and how do they live ?   How
much money do they have and of that, how much
do they spend on different kinds of merchandise ?
What are their habits, the size of their families,
their age distribution ; what kind of vacations
do they take and what do they buy for these
vacations ?   A sufficiently long list of questions
of this sort should be compiled and approximately
answered so as to paint closely the picture, the
outlines of which we have merely stenciled.

" But this," you say, " involves a costly market
survey."   If the store is located in an urban
center it certainly does.   Can you imagine a
general storekeeper in a village of two hundred
inhabitants doing any buying without having
clearly in mind all of this information, and more
too, about the two hundred people who are his
prospective purchasers ?   Obviously not.   Do
you see any real difference between this situation
and that of a larger store, except in degree, not
in kind ?   Again, obviously not.   Market surveys
are viewed with suspicion by many business
executives, I suppose because they are always
expensive and so frequently misleading and in-
conclusive.   That is the fault of the surveyors,
not of the theory of market surveys.

We have already agreed that the words *market survey* are only rather a pompous label for that intimate practice of getting and keeping acquainted, which is the daily bread and butter of the small village storekeeper. The conduct of a good market survey, which is dependable and satisfactorily conclusive, is within the power of any business if it goes at it right. It must determine a few simple things in advance, such as who the people are that it wants to learn about, and what kind of facts it wants to learn about them. Once you have predetermined what information you seek, expert guidance can be had from specialists as to dependable techniques of inquiry to be used in getting the desired information. Then, finally, to complete the survey, imaginative and disciplined interpretation is required. Like all of these processes, what is called for is skill, not second sight or a mysterious power.

Supposing you successfully complete a market survey, are you now in possession of sufficient information to start trying to answer the question of what to buy ? The answer is no. The most significant body of information is still missing. What you still need to know is why people buy things, any things, all sorts of different things. Every effect has its cause, which may be simple or, as in this case, multiple. You cannot ever expect to handle an effect skillfully if you have no understanding of its causes. Hence, the priority of the question : Why do people buy ? I am going to try to suggest, but not chart, an answer to this question.

Psychologists are not all in agreement as to the mainsprings or basic motives of human action. In this problem, however, even the conflict between experts can be made useful to us. Some psychologists say that practically all human motives can eventually be traced to a manifestation in one or another form of the sex impulse. Others say that the need for security is equally basic and instinctive. Still others include the desire for physical well-being, comfort, and pleasure. Some psychologists make a great to-do about the human being's hunger for recognition, praise, and either the friendship or the envy of fellow humans. Since we may not hope to resolve clearly this involved psychological problem, and have any time left for any other problem, we had best lift the entire list without regard to the real merit of each conflicting claim and adopt the list as at least the start of a check list of basic motives.

If we can round this list out with a few more at least nearly basic human motives, and then define closely the exact values we attach to the words used in describing each of these motives in our list, we will be ready for the next step. This will be the subdivision of each motive into the different social manifestations of the motive. Take, for example, the desire for praise from other people. One of the manifestations of this psychological impulse is what we call "snobbery." Certain articles of merchandise, whose intrinsic market value is low, assume, if they contain this extrinsic element of "snob appeal," a con-

siderably higher market value. Regardless of what their intrinsic value may be, certainly a large part of what helps to perpetuate the sale of Rolls Royce automobiles at fifteen thousand dollars apiece is, to be blunt, "snob appeal." There is a certain cachet in being the owner of a Rolls Royce. It stamps you, or used to in more conservative days, as a person of wealth and social consequence.

I think I will recommend to you, in this connection, a book which explores this topic in a most stimulating way. It is called *The Theory of the Leisure Class* and was written by Thorstein Veblen. In his book, Veblen invents the phrase "conspicuous waste" and examines its psychological sources and social consequences. Buying a Rolls Royce is, in Veblen's term, an act of conspicuous waste.

Much of the advertising containing testimonials from socially prominent persons is an attempt in a different way to utilize for commercial purposes the "snob instinct" and the desire for "conspicuous waste." All business and all living are filled with actions stemming from an intuitive effort to harness for a particular purpose one or another of these basic human motives.

One of the facts that I have tried most strongly to emphasize is the superior value of explicit over implicit knowledge. If you can raise your intuitive understanding of the causes of human

behavior even partially to a verbal and explicit level, you will have a far better chance of adjusting your own activities skillfully to the direction and strength of these forces.

We set out to answer the question : what to buy ? If you have made reasonably explicit to yourself the kind of information contained in a market survey, and the kind of information contained in the listing and interpreting of basic motives of human behavior, you will be in a superb position to begin to answer the question.

You begin to formulate the answer to the question by finding out what kind of articles are now manufactured. Let us take a simple example, like wool blankets. There are only thirty or forty producers of wool blankets in the country. It isn't very hard for a blanket buyer to familiarize himself with all the blankets currently produced by these manufacturers. It isn't very hard for the same buyer to rate all of these blankets relatively. Let us go through the process :

Blankets have intrinsic qualities of value, such as warmth, tensile strength, washability, resistance to abrasion, and resistance to fading. They have dimensions which vary. They have different kinds of bindings. They differ in eye appeal according to their designs and colors. They differ in their appeal to the sense of touch, according to the character of their fiber content, and the way in which they have been spun, woven, and finished. They differ in their packaging, and name, and in some other respects.

If a blanket buyer wants to be professional in his buying of blankets and wants to serve his true function as a purchasing agent for the public, he will examine every type of blanket now being made. He will rate them on all of these qualities and then he will do two more things. He will decide whether any one of the blankets now being manufactured is exactly the right article best suited to meet the needs of his prospective client. Unless the blanket appeals to every buying motive that a purchaser would either knowingly or latently want to have satisfied, it is not what it should ideally be. It must not only appeal to every possible buying motive, it must appeal well and not poorly. Since it is almost a foregone conclusion that most blankets don't do this, the buyer's second step will be to use his knowledge of manufacturing and designing techniques to suggest the creation of a blanket which, from his knowledge of customers' needs, will be just the right blanket.

That's what I call a professional buying job. Every good buyer does it intuitively. Almost no buyer does it explicitly or along the lines I have outlined. The improvement to be effected by the explicit method is in my opinion large.

I have just finished reading over what I have written above about professional buying. It strikes me that the average reader may find himself confused by my insistence on the fundamental need for this very complex form of reasoning as a basis for good retail buying. After all, stores

seem to buy what people want, and do pretty
well at it. Why all this carping? Why this
introduction of difficult subtleties into what is
essentially a simple problem? I can offer two
answers to such a query. First, walk through
any store, looking critically at its wares, and
ask yourself, by your own standards (since, after
all, you *are* the consuming public), how many
articles could be improved by how much if they
had received the kind of professional attention
I have outlined. Second, take my word for it
that no single greater contribution could be made
toward generally raising the standard of living
than a faithful and skillful execution of such a
process of professional buying.

I have not touched on the matter of price.
If you were trying to tell a person how to write
a good essay, you would address yourself, no
doubt, to questions of style and content, leaving
to the writer's own inclination the choice as to
whether the essay should be written on plain
or ruled paper, in ink or with a pencil. I put
the matter of price in the same category. A good
purchasing agent obtains the best article he can
for his client at the lowest possible price. I
suppose that the part having to do with getting
the price low is a sort of minor art, like shoe-
shining. I don't think it is very complicated,
and I don't think it is worth enumerating the
techniques in a book which is attempting to show
applications of good thinking rather than to tell
people how to be department-store buyers.

Since merchandising is a process which, in contrast with management, has high powers of generalization, I could go on for some time furnishing you with instances of how good thinking can usefully be applied in this field. I prefer to limit myself to the one important example I have given you. To go further would be only to multiply instances, and not as good instances at that.

The End of Thinking

I SAID in the opening chapter of this book that I was writing with a purpose. I wanted, if I could, to spread some little way the doctrine that men—all men—could learn to think better, and be the better for it. The process of learning is a universal attribute. Since men have in general the capacity to learn, it is but necessary that the information to be learned be set before them ; that someone act as a teacher, or sympathetic mediator between the pupil and the lesson to be learned, and that the pupil himself have truly the desire to learn. This is a circumstantial exposition of why I believe that men can learn to think better. It might be held self-evident that if they do this, they will be the better for it. That is an assertion which is also subject to reasonable demonstration, but I should like, at least for the moment, to hold such demonstration in abeyance.

If you are going to learn about something, you should know what that something is, and so we went on to discuss briefly the nature of thinking as a process. We considered the various patterns and combinations of patterns that it can assume at the conscious and subconscious levels. Fortified with this understanding of what thinking is, it seemed proper next to inquire into its past. We traced some of the high spots of its

history, from Socrates, Plato, and Aristotle through Aquinas, and up to the moderns. We noted how much had been known two thousand years ago ; how little had been added since, and we indulged in a reflection about the unwisdom of ourselves trying today to invent principles known long ago and well recorded by the ancients.

Having in mind that how you think is strictly limited by what you think about, we explored this question and established its limitations. The mind cannot think about what it has never experienced. It can arrange the material of known experience into new and unknown patterns, but what it has not experienced, it cannot arrange. This served to underline the importance of acquiring the maximum of experience. To be a true maximum, not only must the areas of exposure be as wide and varied as possible, but the quality of reception of the new experience needs to be intelligent and highly sensitive. There are many ways, we said, of acquiring well-rounded experience. Acting, that is, living fully is an indispensable way. The two best ways other than this were said to be reading and conversation. With these observations, we completed our study of the act of thinking.

Thinking, I then pointed out, is always an act, not always an art. To learn an art properly you must learn and practise separately its main parts, with the hope that mastery of the parts will enable you, later, to combine them into that smooth, flowing rhythm which is the whole art.

We enumerated six instruments, six general rules, and further special rules for the choice and use of the instruments. These were the parts which, through study and practice, were to be combined into the whole art.

So, we had set before us the cold principles relating to the act and art of thinking. We wanted to bring these principles to life and show their active application to live problems. We chose to do this by applying them to the various aspects of modern business practice and to some of the crucial problems contained therein. One of these business aspects, that of publicity, we analyzed with some thoroughness. The other four phases of business were treated rather more sketchily, on the plea that we had not set out to write a textbook on business but only to use business as convenient material on which to exercise certain of the principles of good thinking. Some of these business problems we solved, others we merely stated, thinking thereby to provide a more realistic panorama of problems in various stages of solution and insolution, instead of pretending that every intricate doubt is capable of clear and firm resolution if only you think well about it. We have left these illustrations and are bringing the argument now to a close. What remains still to be done ?

Thinking is for living, not just for some minor segment of living like business. I cannot well quit a discussion of the end of thinking without at least doing some thinking out loud on the

other parts of living. I find myself thinking
about the old Greek opinion that what every
man desires most is happiness. Why, if this
be true, did they postulate wisdom as the supreme
human good? My mind goes back pleasantly
to how they developed their theme. They knew
quite well that a foolish person is sometimes
happy and if a person be both foolish and fortunate,
he may even be happy for the better part of a
lifetime. This seemed to them to be an impro-
vident way of planning a life. It is the part of
foolishness, they said, to receive what happiness
is offered, but the part of wisdom to reach out
for it and make it your own. What the world
calls great misfortune, they reasoned, is of no
great consequence to the wise man whose happiness
is self-assured because it comes from within.

When Socrates was being judged on the charge
of corrupting the youth of Athens, his judges
were so loath to exact from him the final penalty
of death that they offered to relieve him of further
punishment upon payment of a nominal fine and
his simple assurance that he would no longer con-
tinue his teachings. In the end, he could probably
have saved his life by the payment of the small
fine alone. His friends begged him to accept the
offer and volunteered to procure at once the
sum of money needed. Very gently he refused
to do this and so he was condemned to drink
poison.

I suppose that one of the most moving and
famous passages in all literature is Plato's record

of the drinking of the hemlock—Socrates, the wise man indifferently tossing off the poison while engaging his weeping friends in a few last words of noble conversation.   Socrates believed that his death was of no great importance, even to himself.   It occasioned him great happiness to know that in his living he had been true to his principles, and in his dying he had not forsaken them.   Certain it was that he was among the wisest of men, nor can we well doubt that while he lived he was among the happiest.   His happiness was of his own making and not to be disturbed by untoward happenings outside.   His happiness, if we may judge from the opinion of his contemporaries, was not alone indestructible and impervious to the attacks of the world, it was, besides, very deep.

You may compare the Socratic happiness of the wise man to a river which is deep and flows steadily until it reaches the sea.   The happiness of the foolish man you may liken to a shallow brook which flows fast for a time and then reaching a level spot stops in some blind pool or muddy bog.   This will illustrate to you Socrates' belief that the happiness of the wise man is deeper as well as more lasting than that of the foolish one.

It is hard to write of these things without assuming a grave and almost pontifical tone. I had not intended to sermonize.   I know if I had contented myself with saying to you, " Socrates was a wise man, and, therefore, a

happy one, and his happiness was longer and deeper than if he had been a fool," I would not have been able to convey to you the feeling that Socrates has conveyed to me and many others across the centuries. My role is that of mediator and if what I have just been telling you about Socrates can, by mediation, bring you some understanding of his thinking, it will have served my purpose.

Some of these comforts which Socrates sought in philosophy, others seek and find in religion. Socrates was himself a religious man. It is well to remember that no opposition is possible between the two; religious men would wish to be wise, and wise men are devout.

Socrates provided the real demonstration that if men think better, they will be the better for it. Further demonstration is mere repetition.

The end of better thinking is better living. Better thinking in the microcosm of business, as we have in this book pursued it, is at best but a dress rehearsal for better living in that macrocosm which is the world. This book enters that world in troubled times. But there is no cure for troubled times except it be in the right thinking and right wanting of men.

I thank the reader who has accompanied me this far in an earnest search for such right thinking. I apologize here at the end for whatever the deficiencies of the book may be. I apologize as well for what seems to me to have been the

altogether too frequent intrusion of the vertical pronoun—it would not stay out, but kept re-entering more questingly (believe me) than pridefully.

It remains my hope that the subject of better thinking will one day receive, at the hands of a truly better thinker, the book that it deserves.